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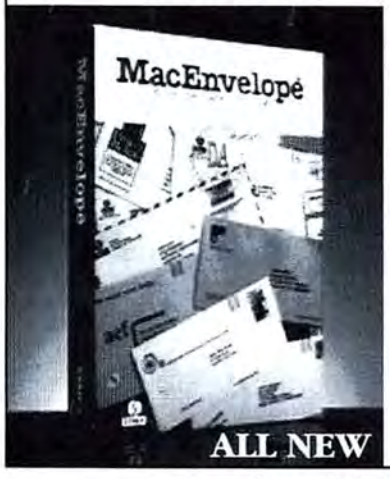
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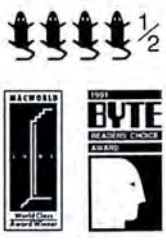
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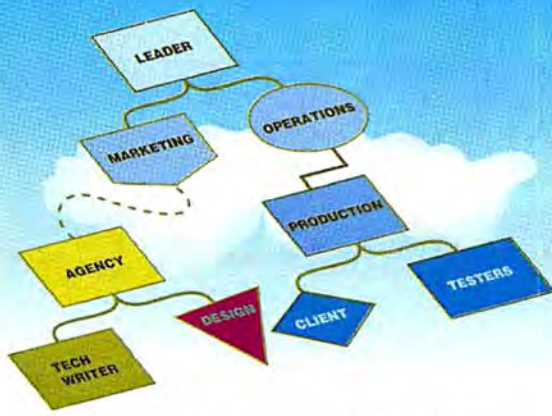
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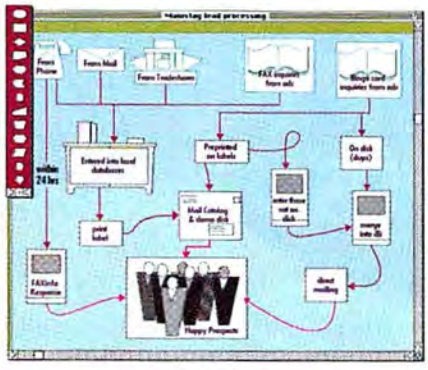
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MacUser, July '91 p. 76

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About MacUser

Creating a Killer Utility

True, *MacUser* loves System 7, Apple's new operating system for the Mac. We're particularly enamored of the new Finder and its many enhancements. But our June System 7 coverage also included a sidebar ("Completing the System," page 107) by executive editor James Bradbury that detailed six important features Apple left out of System 7. Jim went on to propose that enterprising programmers could turn these missing pieces into software utilities that would help round out System 7. And the first item on his list was a surplus-alias squasher.



Executive editor James Bradbury — and his aliases.

One of System 7's niftiest features — aliases — lets users create duplicate icons of files, folders, and volumes. You can put these files, which are only a few kilobytes in size, just about anywhere, in any order — even on another Mac on a network. When you double-click on one, it launches whatever it's aliasing, just as if it were the original. Aliases have a thousand uses, which means that you may well wind up with a thousand aliases on your hard disk.

That's great, except that when you throw away the original file, System 7 fails to hunt down the file's aliases and throw them away too. The solution, as Jim wrote in June, would be a utility that "could let users periodically sweep their disk for unattached aliases and give them the option of deleting them." The idea was so good that we decided to develop it ourselves.

Enter the Assassin

MacUser teamed with developer Bill Monk (owner of MonkWorks in Birmingham, Alabama) to create Alias Assassin. Alias Assassin hunts down all unattached aliases on your hard disk (or any other disk). If an alias points to another volume (such as a floppy disk or AppleShare server), Alias Assassin will ask you for the disk or attempt to mount that volume. Alias Assassin then presents you with a list of all the unattached aliases so that you can tell it which ones to delete.

Alias Assassin also tries to reattach aliases that have lost their parent. This might happen if you have an alias pointing to an alias pointing to a real file and you delete the middle alias by mistake. You can even set Alias Assassin to gun down *all* aliases on your hard disk if you just want to start from scratch with a clean, alias-free disk.

You can get your own copy of Alias Assassin from the *MacUser* forum on Zmac, *MacUser*'s on-line service (just log on to CompuServe, and type GO ZMAC).

The list of what's missing from System 7 still suggests many additional enticing opportunities. We'll be keeping you posted on those we come across as well as possibly developing some more of our own. Keep your eye on Zmac and Beating the System's "System 7 File" in the coming months.



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LETTERS



When Gloria Leitner, of Boulder, Colorado, read about Lifeguard, an INIT and DA that periodically interrupts your work to remind you to do something else (Help Folder, May '91, page 272), she decided she had a better idea: "Quit your addiction! Don't keep buying DAs until you've put your whole life on a Mac. What's so hot about never having to glance at a Rolodex, punch numbers into a calculator, or write a Post-it note?" Perhaps Gloria had been staring at her own Mac a little too long. But she read our mind. "Heresy? No, sanity—your body will thank you, even if it does take a few seconds longer to do something in 'the real world.'" Sure, we'll stop—right after we find a System 7-savvy stapler to round out our own DA collection

✉ *Write to Letters to the Editor, c/o* MacUser, *950 Tower Lane, 18th Floor, Foster City, CA 94404, or post your letter on the MacUser Forum of Zmac, our on-line service.*

All letters become the property of MacUser, *and we reserve the right to edit any letters we print. Please include a return address and a daytime phone number.*

Safe Six

Your article "70 Things You Need to Know About System 7.0" (June '91, page 96) was so informative that it quenched my thirst to upgrade to 7 right away. I already have most of what System 7 offers with third-party software such as Suitcase II and ATM. And my work style is such that I don't much need other 7 features such as interapplication communication and aliasing.

But what interested me most was the statement that "1-megabyte machines such as the Classic will continue to ship with the most recent version of System 6." Does Apple intend to keep System 6 around to license to third-party vendors so they can make low-cost Mac clones, while Apple retains total control of the superior System 7 machines?

Jon B. Slobins
Damascus, MD

Continued shipments of System 6 are almost certainly just a stopgap measure until Apple can make 2 megabytes of RAM standard in every Mac. That doesn't mean that lots of people won't keep using it though — especially for the first year or so. See Jon Zilber's column "Compatibility Checkmate" (August '91, page 23) for some tips on how to stay on the cutting edge with System 6. — AA

Smarting Over System 7

This morning I began installing System 7 on my Mac. The Compatibility Checker told me that I have only one 7-compatible program: my Microsoft Works spreadsheet program. Four others (including my three-week-old TypeStyler 1.5) aren't available. And FreeHand needs an upgrade. But here's the kicker: My Radius display system isn't compatible.

I called Apple, and all I got was condolences.

I don't believe I care to invest another $5,000 in hardware and software just to run a fancy $100 version of MultiFinder. Wish I'd known this before I spent the money.

Larry Hacker
Mabelvale, AR

We've heard from several early System 7 adopters — mainly complaining about incompatibilities. But the real miracle is that so many applications do run under 7—even if its Compatibility Checker has never heard of them. And in fact, most commercial Mac products—

Dear Mr. Sculley . . .

Poor Apple. First, thanks to Windows and cheap PCs, it had to abandon its maximum-profits strategy and come out with low-cost Macs. Now it has to consider an important logical consequence of the new strategy — selling those low-cost Macs through low-cost outlets: the new superstores — and perhaps even mail-order. And you can bet Apple's old-line dealers are howling.

Superstores are starting to dominate many consumer-product areas, from sporting goods to household appliances. They're usually in big warehouses in suburban areas, and "sales assistance" is most likely to be informative placards, if that. But the inventories are massive, and the prices rival mail-order prices.

We bet Apple'd love to know how you feel about all this. It's time to name your poison:

Speak Up:

Where do you buy Mac products, and why?

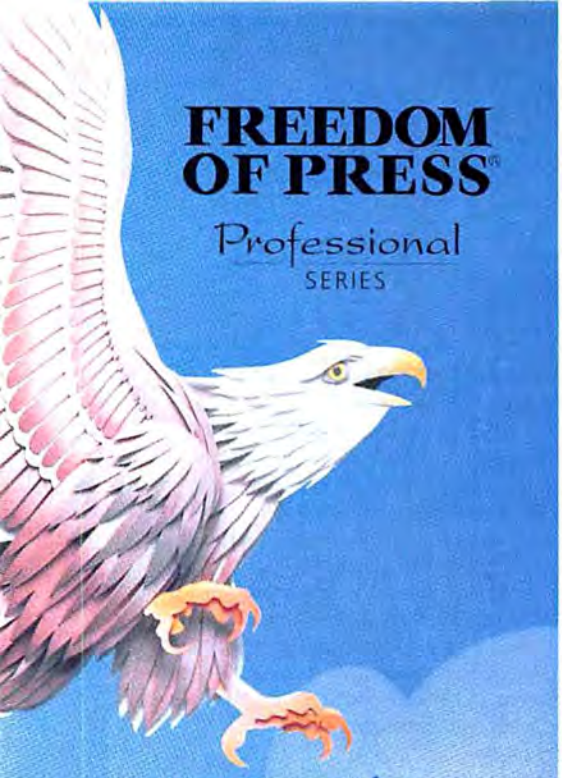
✉ *Send your thoughts to Dear Mr. Sculley, c/o* MacUser, *950 Tower Lane, 18th Floor, Foster City, CA 94404.*

In June we asked whether you thought Apple should have Claris bring out Windows versions of its product line. Then Apple announced that Claris would do so just as the June *MacUser* came out. Mark Sekulich, of Providence, Rhode Island, had the most typical reaction: "If the Claris Windows products are any good, that's great news for Mac users in IBM-dominated offices — more connectivity and all that. Not so great for those of us who don't have to play patty-cake with IBMs; the resources Claris is diverting into Windows projects will come out of the hide of Mac programs and upgrades."

Meanwhile our May question about a new Mac notebook computer continues to generate heated debate. Mark Sainsbury, of London, wanted five things: "less than 6 pounds, ten-hour battery life, SCSI port, good links, full-sized keyboard. Minimal size and weight mean non-standard storage hardware and supporting software. But if this is customized for Macs, I'd certainly buy one!"

Alan Perlingiere, of Friendswood, Texas, asked for a "quality trackball. The Portable's little gum-rubber pickup rollers get jammed up against the support trunnions, making action erratic. Most people in our company have gone back to a mouse."

And K. M. Moore, of Coppell, Texas, had some design tips. "Vary the case colors, like the black speckled Mac that was discontinued before it shipped. Make two models, one with the right price; the other with the right features. Make it heavier than it looks — consumers think light things are cheap. And let Kawasaki see the prototype. He doesn't seem to like anything else you do — try to win him over on this one."



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including the Radius product line — will have received 7-compatibility upgrades over the summer of '91. — LT

Raw Dealer

Well, System 7 is finally available, free, to millions of faithful Mac users. *Wrong!* Instead, it's going to cost me at least $99. Why? Dealers whine, "Well, Apple isn't *making* us give it away, so" The dealer I've bought two Macs from will let me copy System 7 off his computer — for $125. Doesn't Apple *want* us switch to System 7? I know the answer: Apple wants to rip us off.

Peter R. Payne
San Diego, CA

Sounds like you bought two Macs from a lousy dealer. When we called our local dealer (ComputerWare), it offered to let us copy the files for free, as long as we brought along our own blank disks. Alternatively, you can join any of the hundreds of bulletin boards and download System 7 for free. Of course, neither of these options will get you the documentation or the free tech support — which is really what Apple's charging for. In the meantime, find a new dealer. — JB

Manual Transgression

In "70 Things You Need to Know About System 7.0," June '91, page 96), you state that with System 7, you can save custom desktop patterns by double-clicking on them. Big deal. I can do that now with System 6.0.7. One thing to note, however: You can't save changes to two of the desktop patterns permanently (that is, the original pattern reappears every time you open the General control panel). These two are the standard sickly greenish-blue squiggly things seen on Mac IIs the world over and the blue bathroom tile pattern that is the IIsi's default. All other patterns can be edited *and* saved.

I feel compelled to note that this tip was the one and only thing I have ever learned from Mac manuals. It won't ever happen again. I'll burn them!

Tony Dunn
San Luis Obispo, CA

Maybe you should send them to us instead. — JB

The Direct Line

If Apple really wants to be "kinder," per Guy Kawasaki's article "A Kinder, Gentler Apple" (June '91, page 45), it could start by offering direct technical support instead of making us use "service providers." The "service providers" in my area were not only unavailable when I called for help but were highly impatient when I finally made contact.

Considering what I forked over for my Mac system, Apple should offer what Fifth Generation (of Suitcase fame) does: tech support 24 hours a day, 7 days a week, via an 800 number!

Stace Aspey
Long Beach, CA

Apple is dipping a toe into the direct-tech-support waters with the release of System 7. Purchasers of the Personal Upgrade Kit get 90 days of phone support, and network types get 180 days. — AA

Fine Printing

I was surprised by the article "Personal Best: Two New Apple Printers (May '91, page 90). I was all set to read about hot new printing bargains and found instead a test chart showing my HP DeskWriter outperforming them all — even the LaserWriter LS.

When I was shopping for a printer, I found that the DeskWriter's speed, print quality, and noise level all compared favorably with the competition's. Looks like that's still true.

It's not a laser printer, but with the correspondence and manuscripts I do, so what? Anyway, keep up the good work. Maybe a broad comparison of all Mac printers will follow soon?

Michael Adelman Canino
Wilton, CT

This issue's lab reports on PostScript and QuickDraw printers should answer your questions. — HB

Pirates of Repentance

I'd like to respond to Paul Gifford's letter to the editor (April '91, page 16) and Mr. Dvorak's earlier comments (January '91, page 346) about software piracy.

We all hate getting stung by buying a high-priced, lousy product or one whose copy protection won't let you back up the program disk. But, in spite of all our rationalizing and the fun Mr. Dvorak has with our minds, using stolen software is illegal, unethical, and immoral.

Of the programs you steal, how many do you get around to purchasing after you use them and like them? Many mail-order firms — MacConnection, for example — offer 30-day money-back guarantees on most programs they sell. This way you can legally examine both the program and its documentation before you buy it.

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MacDraw Pro doesn't.

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MacDraw Pro doesn't.

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MacDraw Pro doesn't.

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LETTERS

So the next time someone offers you a copy of some neat program, remember that the only person you're fooling is yourself. Give the product a real chance: Buy it!

Steven A. Brown
Kaysville, UT

Revenge of the Sharp-Eye

Jon Zilber's column "The Upwardly Mobile Mac" (June '91, page 25) was wrong about robots. R2D2 (not C3PO) was the *Star Wars* droid that could plug an appendage (not a finger) into a wall socket to interface with the Death Star's (not the starship's) computers. C3PO was the anthropomorphic one with the aristocratic demeanor. R2D2 was squat and cylindrical and communicated in whistles and beeps (with the red "eye" of the most user-friendly/unfriendly computer ever, *2001*'s HAL 9000). R2 had the kind of mission Zilber described, although it did other cool tasks too, such as projecting holographic videos of princesses.

Matthew DeBord
New York, NY

Open the pod-bay door, C3PO. — JZ

Not So Elementary

I just lived through a "Living with Murphy" (May '91, page 247) kind of experience: My Mac came down with a bad case of WDEF, which I eliminated with Virex 3.1. I then used the Installer to replace the System and replaced my programs from the originals.

However, my Mac continued to crash whenever I chose certain fonts or selected areas of documents in Microsoft Word. And several programs (Word included) would crash if I attempted to print or use Print Preview. Replacing the programs and/or the printer driver again didn't help. Virex confirmed the absence of any virus.

I finally traced the trouble to a corrupted Adobe Type Manager. The Installer had, of course, carefully preserved the corrupted ATM each time I replaced my System. Any selection of an ATM font caused the crash, as did scrolling past a document selection containing an ATM-specific font or attempting to print anything with ATM fonts.

Although this may seem quite logical and simple to troubleshoot, such a scenario can defy reason under a deadline crunch. I pass my story on to warn others that add-ons such as ATM can become corrupted and elude detection. Also, replace the *entire* system following a serious infection.

T. B. Shea
Belmont, MA

I've Got a Little List

Here are the top ten reasons why I *almost* canceled my *MacUser* subscription:

10. The writers of *1001 Hints & Tips for the Macintosh* haven't produced any new tips since PageMaker 2.0.

9. I have to save my money to buy expensive Apple products.

8. Dvorak just isn't funny anymore (he must be writing his articles on a PC).

7. I'm tired of reading about System 7.

6. I generally can't retain any information beyond 300 pages.

5. I'm sick of reading complaints that Microsoft Word is too hard.

4. There hasn't been an equally good-looking *male* in a pool gracing *MacUser*'s cover.

3. The weight of previous *MacUsers* made my bookshelves sag.

2. Bill Gates doesn't seem to know that those huge pullout Microsoft ads have no more impact than a regular-sized ad.

1. I have to protect my keyboard when I'm reading *MacUser*, because if I see that MacWarehouse blonde one more time, I'll puke.

And here's the main reason I didn't:

Andy Ihnatko's Help Folder answers — specifically his comment, "if you angle [your three monitors] just right, you can bake a potato on your desk in less than 30 seconds."

Andy reestablishes the prerequisite that Mac users must possess a sense of humor.

Cynthia Gray
Cambridge, MA

Palmtop Partisan

As a VAR (value-added reseller) for the Atari Portfolio, specializing in medical applications, I was distressed by Darryl Lewis' article "Data on the Run" (June '91, page 110). The Portfolio has its limitations, but they don't justify his negative review — especially when available software does an excellent job of linking Portfolios to Macs. As an avid Mac user, I wouldn't have chosen to incorporate Atari's Portfolio into my products if I hadn't been able to link the two.

James Jones
Newport Beach, CA

The Portfolio delivers its advertised features and can share files with Macs. It just wasn't as easy to use as the other three units we tested. — DL



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"...many more B&W paint features than SuperPaint, almost all of PixelPaint's color tools, a superset of MacDraw II's object-oriented features, and the gray-scale prowess of Digital Darkroom. All this comes in a single program for less than half the price...", wrote David Pogue in MacWorld.

Perhaps Chris Prior of MacUser UK summed it up best when he wrote that "UltraPaint...could prove to be the ideal software package for those looking for a powerful, all-around draw and paint program."

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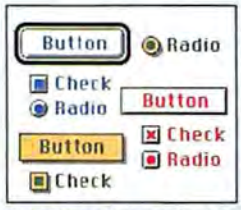
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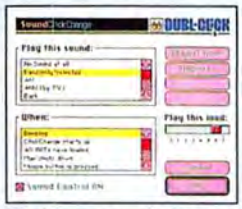
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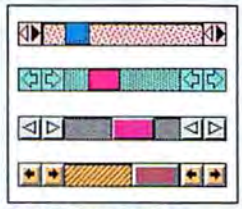
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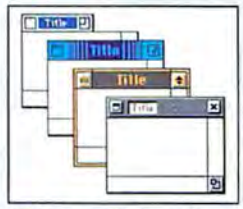
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Please circle 23 on reader service card.

LC Plea

Because my new Mac LC is supposedly a "runaway success," I hope third-party developers are planning to make the extras we need — such as:

1. Carrying cases for an LC and its 12-inch monitor, such as the nifty ones for the Plus/SE/Classic.

2. Something to raise the LC's front when you replace its crummy keyboard with the Apple Extended Keyboard, which blocks the disk slot (wadded-up socks work, but . . .).

3. Memory upgrades, genlock (for overlaying video with computer output), more products supporting the LC's sound digitizer, and other special features.

Plus/SE/Classic users have it made — a zillion products support the shape of their Macs. Will the current LC product shortage last forever, just because there are fewer LCs than any other type of Mac?

Peter R. Payne
San Diego, CA

We at MacUser *— especially those who've also bought LCs — share your concerns. Fortunately, we've seen several key items show up, including some you didn't mention — such as math-chip sockets on LC boards, an internal fax modem, Ethernet cards, third-party video RAM, and large-screen displays using the built-in video output. — LT*

Speedy CD-ROM Players?

You say CD-ROM is slow and always will be, because that's how Sony and friends defined it (see "CD ROM Drives: Is It Time for CD-ROM?," June '91, page 150). But why? After all, it's just bumps on a disk — how fast those bumps are read can't matter!

Some entrepreneurial hacker should be able to cannibalize ideas from other drive technologies to build a better CD-ROM drive — one that spins faster; uses lighter, more agile read heads; uses multiple read heads; and/or adds caching.

We can't already have come up against the medium's physical limits. Other optical technologies (WORM, erasable optical, and so on) claim to be "approaching the speed of magnetic media." As a read-only medium, CD-ROMs should be the fastest of the bunch.

So — when will we see a speedy CD-ROM drive?

Carl J. Manaster
Globe, AZ

CD-ROM drives share audio CDs' drive technology, disc format, and disc-pressing plants. "Improve" any of the specs, and you'd lose the compatibility and economies of scale CD-ROMs now enjoy. In theory, you can build a much faster drive that packs four times the data onto the same-sized disc — but it would take a marketing giant to establish such a new standard (which would render today's drives and discs obsolete). Are you listening, Sony? — RM

Cache Crunch

When the access time of a CD-ROM drive is tested as in "CD-ROM Drives: Is It Time for CD-ROM?" (June '91, page 150), results can vary, depending on how the benchmark program measures access time. If the benchmark program communicates through the device driver, the results will be skewed for the Chinon CDA-431, because it employs a *cached* driver that reads 64 blocks at a time. This is why the CDA-431 benchmarks at 700 milliseconds instead of the correct 520 milliseconds.

Why do we use a cached driver if it slows down access time?

Our drive has no hardware cache, so we use a cached driver to shorten the apparent drive access time in most normal, everyday applications. When a file is read from a CD-ROM, the blocks containing that file are usually arranged in physical order on the disc medium. So by reading multiple contiguous blocks simultaneously from the drive, we take a chance that the next block or two requested by the Mac will be contiguous with the current one. If they are, the block will already be in the cache and will come from the Mac's memory. If we get a cache hit or two, we save lots of time, because it takes only 700 milliseconds to read 64 blocks of data but 520 milliseconds to read just one block. The cache system is designed to maximize cache hits in normal applications.

David M. Cole
Director of Product Development
Chinon America, Inc.
Torrance, CA

You're right. Our FWB benchmark test suite averages thousands of brief random accesses and not the longer, contiguous reads that the Chinon CDA-431's cached driver is designed for. New Chinon software — released after our report was published — lets you switch the cache on or off. When we retested the CDA-431 with the cache turned off, access times dropped to less than 500 milliseconds — better — but still not in the same class as the fast Toshiba-based drives. In any case, as we



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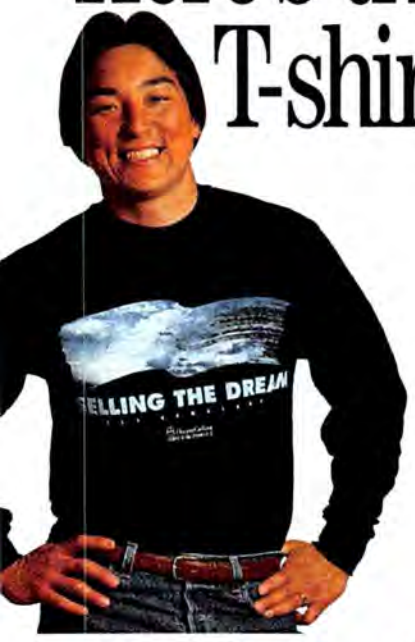
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Here's the T-shirt.



Can the book be far behind?

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said in our report, speed isn't everything. If it were, we wouldn't have awarded the CDA-431 four mice. — RM

On DEC

"Mac, DOS, and VAX File Servers" (June '91, page 134) compared performance accurately but missed the main point of networking Macs with a Digital VAX: to integrate information from various sources.

For example, a VAX server can convert text and graphics files from one format to another as they shuttle between DOS, Mac, and UNIX clients — all on the server, without requiring clumsy import/export software on the Macs and PCs.

Install Digital's Pathworks for Macintosh, and you can add printer-resource sharing, network-database access, E-mail, X windows, terminal emulation, wide-area AppleTalk networking, and unattended central backup of your Macs' local disks.

Pathworks is the first result of a long-term Apple/Digital collaboration. Digital's VAX-based services for DOS clients have shown major performance gains from release to release. You should expect comparable gains on the Mac side.

Al Cini
Marlton, NJ

Word Imperfect

WordPerfect 2.0 doesn't deserve the four-mouse rating your reviewer, Eric Taub, gave it (June '91, page 56). First of all, it isn't really a WYSIWYG word processor. You can't see things such as headers, footers, or footnotes without either printing the document or switching to a clumsy, noneditable print-preview mode.

And it's slow, even on my Mac IIci with plenty of RAM. I'm a slow typist, but I can easily outrun the keyboard — especially if a defined style is active. And bombs, hangups, installation problems, and incorrect screen updates continually plague WordPerfect.

I think Mac users would be more productive and satisfied with FrameMaker, Nisus, FullWrite Professional, or WriteNow. If you need DOS WordPerfect compatibility, use a translator package such as MacLinkPlus/Translators or Word for Word/Mac.

Daniel Brocklebank
Columbia, MD

Your points are well taken, but you're overlooking two important considerations. First, although WordPerfect 2.0 is often cumbersome, many of its new features are well crafted and Mac-like — for example, the style-sheet management, with its private and networkwide style libraries. Second, WordPerfect offers outstanding customer support. And the changes in 2.0 indicate that this software giant has finally made a serious commitment to the Mac market. — ET

Scanning the Typist

Your review of the Typist, our hand-held OCR scanner plus recognition software (March '91, page 58), compares it only with our OmniPage software used with a flatbed scanner. But obviously no hand-held scanner can deliver a quality image *as consistently* as do flatbed scanners. Had your reviewer compared the Typist package with other hand-held scanners, he would have seen that its performance is exemplary.

I am also puzzled by the statement that "Typist 1.0 took nearly three times as long as OmniPage 2.1 to get an acceptable recognition run." Both products have the same recognition-engine software, so the overall speed should be similar. Actually, the Typist can be faster, because it delivers text directly into target applications.

The reviewer also says that the Typist "lacks automatic page decomposition" and that "you have to scan around [graphics] manually or mask them before you begin." In fact, the Typist does automatic page decomposition and graphics parsing quite well, again because it has the same type of recognition engine as does OmniPage.

Finally, why did the reviewer question the efficacy of the SCSI interface's being last in the chain? Most SCSI devices in the Typist's price range use the same port. Users needing to use a different port can always buy a $79 T cable.

Lawrence Miller
VP Marketing, Caere Corp.
Los Gatos, CA

The Typist enjoys the advantages as well as the disadvantages of being a unique package. We compared it with other OCR products, none of which are seriously touted for use with hand scanners. As for speed, our tests confirmed that although the Typist is fast, OmniPage is much faster. We couldn't get the Typist to do page decomposition — the automatic elimination of graphics on the page — and this feature is neither claimed nor explained anywhere in the manual. Several testers here were unable to make the Typist decompose pages. — SJ

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Buy PixelPaint Professional 2.0 *now* and receive a CookBook tutorial ($19.95 value) free when you return your registration card. Call 1-800-334-3005 for more information about Pro 2.0.



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Screened Out

I had trouble with step 3 of your Desktop Publishing/Step by Step article "Screened Effects" (June '91, page 200).

I completed the Halftone Screen dialog box in Aldus FreeHand (line screen of 30 lines per inch with a 135-degree angle), but it printed with a 45-degree upper-right to lower-left angle. Yet the manual supported your directions. I tried 90 degrees to see what would happen, and the lines were vertical (I expected horizontal).

After many tries, I found that with a –135 degree setting, FreeHand turned that into 225 degrees and the lines printed properly from left to right.

I still can't get the proper line screen when I follow your directions. What have I overlooked?

Terrence Meagher
San Francisco, CA

The directions were accurate, and the screen angles you got were the correct ones. So what did you overlook? The possibility of a printing error. When we color-separated the image with Aldus PrePrint, we stumbled across a little-known problem: When outputting an image emulsion side down to an imagesetter, PrePrint correctly reverses the image but doesn't flip the line screens. So the printed result in the magazine was a mirror image of what it should have been. — AA

A Cut Above

I'm a Guy fan. His columns are always witty and personable, and I appreciate the fact that he strays far from discussing Macs. Let's face it — an entire magazine full of computer articles is downright dull. So go on, Guy, give us your opinion of the NRA. Tell us how nice Singapore was. Talk about the family. In a world full of people, it's nice to deal with people, not machines. Even ones as great as the Mac.

Keep up the good work, Guy, and if you don't mind some motherly advice — cut your hair above your ears.

Jennifer Krist
APO NY

Clarifications

The JVC printer referred to in the "On the Horizon" sidebar in "Color PostScript Printers" (May '91, Buyer's Guide page 50) will use a one-page-size (A4) format, not to be confused with the two-page (A3) printer that DuPont now markets under the product name 4CAST. It also uses a JVC print engine.

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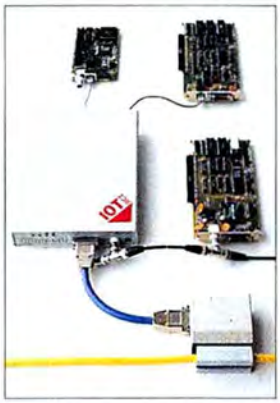
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JON ZILBER

One for the Dealer



You may be buying the right stuff, but are you buying it from the right place? It just might depend on what's covering the floor of the store.

Quick: Picture yourself in the checkout line of the place where you bought your latest new software or hardware. What's under your feet?

It's a strange question all right, but it's one way to tell if you're shopping at the right place. Let me explain.

Every month, MacUser Labs tells you which products are the best buys for which kinds of computer users. What we can't tell you is how — or where — to buy them.

When you go to make a purchase, your priorities are different from everybody else's. You value each of the following factors — low prices, product availability, how close you are to the dealer's location, how tough it is to park there, and so on — differently than does everybody else. Your answers are completely different from how anybody else weighs these factors. And they're probably different from what they'll be tomorrow.

But even more importantly, the retail options available to you are also changing. The biggest change sweeping the consumer retail channel is warehouse mania. You know the places: huge megastores that sell everything from faucets to fauna, from yo-yos to Yugos.

The computer industry's equivalent of the warehouse store is the "superstore," vast acreage of shelves full of the latest software and hardware goodies. The floor space is vast. The inventory is vast. The lines at the cash registers are vast. The number of helpful salespeople, however, is usually less than vast. You might even say they're half-vast — but just don't say it too quickly.

The superstore assumption is that you know exactly what you're looking for before you walk in the door. You read the lab reports, the ads, the product specs, so *you* — not the salespeople — have the expertise. The store keeps its costs low by keeping the traffic moving at a steady clip and staffing the place with low-paid workers who've just been retrained to ask "You want a hard disk with that?" instead of "You want fries with that?"

The Floor Show

The secret behind the success of warehouse stores and superstores is no secret. I was at a local superstore the other day and heard one customer ask his buddy if it was a good place to buy blank floppies. His buddy had a simple answer: "Check the floor." This got a puzzled look from his friend (and me), so he continued: "If the store has carpeting, skip it. Don't forget who's paying for the carpeting, the fancy track lighting, and everything else. If the floor is bare concrete, you're in the right place."

For years savvy Manhattanites have known that the way to buy consumer electronics is to shop around and poke about in the posh and relaxed atmosphere of Macy's until you know what you want and then walk across the street and negotiate a much better price at a cramped and hectic storefront outlet such as 47th Street Photo.

Similarly, computer superstores are flourishing at the expense of traditional dealers that never got beyond the notion that people would pay exorbitant prices to get personalized, attentive service from salespeople who dressed well but who knew less than their customers about the products they were selling.

But will superstores stand the retail channel on its head? It's doubtful — considering that the retail channel has already been standing on its head for years, thanks to the success of direct-mail companies.

Check in the Mail

Computer dealers, supposedly, had to charge higher prices to support their overhead and to pay for technically savvy salespeople, robust inventories, massive advertising, and so on. Direct-mail companies could charge less, because they had none of the above — or so went the theory. In fact, the mail-order companies often offer the best tech support, the fastest order fulfillment, and the most-innovative marketing ideas in the business. Overnight delivery and — in some cases — same-day and even *same-afternoon* delivery are available, at little or no charge.

Many mail-order companies provide free videos and any special tools required for hardware installation. Many mail-order companies have been progressive in using environmentally acceptable packing materials such as shredded recycled paper and real popcorn instead of Styrofoam. Most mail-order firms have fair return and restocking policies. And mail-order people seem to actually *enjoy* helping people make the right purchase.

So with superstores on the rise and direct-mail companies offering full service at discount prices, it should come as no surprise that traditional dealers are getting harder to find than the culprit in an INIT conflict.

But are dealers only for chumps? No, but paying higher prices to a full-service computer dealer is worthwhile only if going to the dealer

truly adds value to the sales process. Here's a little quiz to help you separate the wheat from the chaff and the riff from the raff. For each question, award your dealer the number of points shown in parentheses at the end of the response that most closely matches how your dealer would respond.

1. Take a floppy disk with you into your dealer's store. The disk has been formatted to 1.4 megabytes and contains a DOS file. Ask your dealer to copy it.

a. He returns quickly, pleased with his success, and hands you a photocopy of the floppy. (0)

b. He explains that he can't copy it but knows that it's because he doesn't have a 1.4-meg floppy drive handy. (1)

c. He successfully copies the floppy. (2)

d. He copies the floppy and saves a copy of the file in a native Mac format too. (3)

2. March into the dealership, and tell the saleswoman that your machine won't run After Dark.

a. She says, "Well, you shouldn't be working so late." (0)

b. She asks what System software you're using. (1)

c. She launches into a diatribe on the proper speed and volume for flying toasters. (2)

d. She suggests that you have a System-software incompatibility and offers you upgrade advice. (3)

3. Evaluate the banner in the dealer's window. It says the following:

a. "Free 8-track tape with every box of floppies." (0)

b. "Guaranteed lowest prices." (1)

c. "Knowledgeable, helpful sales staff who don't work on commission." (2)

d. "Knowledgeable, helpful sales staff who *do* get commissions — but only for repeat business." (5)

4. Walk into your dealer's with an armful of blank floppy disks. Ask if you can get a copy of System 7. The answer is as follows:

a. "Certainly — that will be $125." (0)

b. "Yes, as long as you have your own floppies." (2)

c. "Sure. You might want the documentation later, but it's your choice." (3)

d. "Yes, and don't worry about the documentation. I've read it thoroughly and have alerted Apple to a few errors. Here's my home phone number and beeper number — feel free to call me anytime, day or night, no matter how trivial your questions are." (5)

5. Call your dealer when he's really busy; you can tell what kind of an outfit you're dealing with by what happens when you get put on hold.

a. You get music: Frank Sinatra or Itzhak Perlman. (0)

b. You get music: Nancy Sinatra or Rhea Perlman. (–3)

c. You get a canned sales pitch. (–4)

d. You get a canned sales pitch, and it's a 900 number. (–10)

If your dealer scores fewer than 10 points, it's time to go shopping — for a new dealer.

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Printer	Type	Grappler	Notes
Alps			
ALQ200 Series	24 Pin	Grappler LX	6
ALQ300 Series	24 Pin	Grappler LX	6
Allegro	24 Pin	Grappler LX	6
ASP 1000	9 Pin	Grappler 9 Pin	1
P2000+, 2100	18 Pin	Grappler 9 Pin	1
P2400	18 Pin	Grappler 9 Pin	1
AT&T			
AT&T 450	Daisy	None	
470 Series	9 Pin	Grappler 9 Pin	5
495	Laser	Grappler LX/LS	9
570, 571	9 Pin	Grappler 9 Pin	1
Blaser			
Star 2	Laser	Grappler LX/LS	9
Brother			
1109	9 Pin	Grappler 9 Pin	2,11
1209,1509,1709	9 Pin	Grappler 9 Pin	1
M-1909, M-1809	9 Pin	Grappler 9 Pin	1
1724	24 Pin	Grappler LX	6
HL-8	Laser	Grappler LX	9
HR Series	Daisy	None	
M-2518, 4018	18 Pin	Grappler 9 Pin	1
TwinWriter	9 Pin	Grappler 9 Pin	1
Canon			
BubbleJet 10e	InkJet	Grappler LX	
A-60		None	
CIE America			
LiteWrite	9 Pin	Grappler 9 Pin	1
Centronics			
PS210,PS220	9 Pin	Grappler 9 Pin	1
C.Itoh			
1550S+,NLQ	9 Pin	None	
C-210, C-215	9 Pin	Grappler 9 Pin	1
C-310, C-315	9 Pin	Grappler 9 Pin	1
C-715	24 Pin	Grappler LX	7
C-815	24 Pin	Grappler LX	8
CI-2500	9 Pin	Grappler 9 Pin	5
CI-4000	9 Pin	Grappler 9 Pin	1
D10-40, F10-55	Daisy	None	
Jet-Setter	Laser	Grappler LX/LS	9
Lips 10+	Laser	Grappler LX/LS	9
ProWrtr Jr.+	9 Pin	Grappler 9 Pin	1
8510	9 Pin	Grappler 9 Pin	
Citizen			
120-D, 180-D	9 Pin	Grappler 9 Pin	4
124, 224	24 Pin	Grappler LX	7
GSX-140	24 Pin	Grappler LX	
GSX-200	9 Pin	Grappler 9 Pin	
MSP-10, 15E	9 Pin	Grappler 9 Pin	1
MSP-50	9 Pin	Grappler 9 Pin	1
Data Products			
9030, 9040	9 Pin	Grappler 9 Pin	1
9034, 9044	24 Pin	Grappler LX	6
DCS/Fortis			
DM-2215, 1310	9 Pin	Grappler 9 Pin	1
Diconix			
150	12 Pin	None	
300W	9 Pin	Grappler 9 Pin	1
Epson			
EX Series	9 Pin	Grappler 9 Pin	1
FX-80, 80+, 85	9 Pin	Grappler 9 Pin	1
FX-86E,FX-185	9 Pin	Grappler 9 Pin	3,11
FX-100,FX100+	9 Pin	Grappler 9 Pin	1
FX-286	9 Pin	Grappler 9 Pin	3,11
FX-286E	9 Pin	Grappler 9 Pin	3,11
JX Series	9 Pin	Grappler 9 Pin	1
GQ3500	Laser	Grappler LX/LS	9
LQ500	24 Pin	Grappler LX	
LQ800, LQ850	24 Pin	Grappler LX	
LQ1000, LQ1050	24 Pin	Grappler LX	
LQ2400, LQ2500	24 Pin	Grappler LX	
LX800, MX 80	9 Pin	Grappler 9 Pin	11
DFX-5000	9 Pin	Grappler 9 Pin	13
DFX-8000	9 Pin	Grappler 9 Pin	13
ELP7000	Laser	GrapplerLX/LS	
Facit			
4509	9 Pin	Grappler 9 Pin	3,11
4510, 4511	9 Pin	Grappler 9 Pin	1
4513, 4514	9 Pin	Grappler 9 Pin	1
B1100, B3100	9 Pin	Grappler 9 Pin	1
B3150	9 Pin	Grappler 9 Pin	1
B3450	24 Pin	Grappler LX	6
C5500	9 Pin	Grappler 9 Pin	1
C6510,C6520	9 Pin	Grappler 9 Pin	1
C7400,C7500	9 Pin	Grappler 9 Pin	1
P7080A	Laser	Grappler LX/LS	9

Printer	Type	Grappler	Notes
Fujitsu			
DL2400	24 Pin	Grappler LX/LS	6
DL2600	24 Pin	None	
DL3000 Series	24 Pin	None	
DL4400	24 Pin	Grappler LX	6
DL5600	24 Pin	None	
DX2100, 2200	9 Pin	Grappler 9 Pin	1
DX2300, 2400	9 Pin	Grappler 9 Pin	1
RX7300	Laser	Grappler LX/LS	9
Genicom			
1025	9 Pin	Grappler 9 Pin	1
5010	Laser	Grappler LX/LS	9
Hewlett Packard			
DeskJet	Inkjet	Grappler LX/LS	9
DeskJet Plus	Inkjet	Grappler LX/LS	9
LaserJet	Laser	None	
LaserJet II, IIP,IID	Laser	Grappler LX/LS	
LaserJet III	Laser	Grappler LX/LS	
PaintJet	Inkjet	None	
ThinkJet	Inkjet	None	
IBM			
ProPrinter	9 Pin	Grappler 9 Pin	
QuietWriter		None	
Kyocera			
F-1000A, F-1010	Laser	Grappler LX/LS	9
F-2010, F-3010	Laser	Grappler LX/LS	9
Laser Computer			
190E,190A	9 Pin	Grappler 9 Pin	1
Mannesman Tally			
MT85, M86	9 Pin	Grappler 9 Pin	1
MT87, M88	9 Pin	Grappler 9 Pin	1
MT185	9 Pin	None	
MT290, M460	9 Pin	Grappler 9 Pin	1
MT330	24 Pin	Grappler LX	6
MT910	Laser	Grappler LX/LS	9
MT-SP80	9 Pin	Grappler 9 Pin	
Nissho			
NP2410	24 Pin	Grappler LX	6
NEC			
LC860	Laser	Grappler LX	9
P5XL, P6, P7	24 Pin	Grappler LX	6
P9XL, P2200	24 Pin	Grappler LX	6
P5200, P5300	24 Pin	Grappler LX	6
PC8023-A	9 Pin	Grappler 9 Pin	
Okidata			
80, 90 Series	9 Pin	None	
2410 Series	9 Pin	None	
KXP-1080 Series	9 Pin	Grappler 9 Pin	
KXP-1090 Series	9 Pin	Grappler 9 Pin	
LaserLine 6	Laser	None	
ML-180	9 Pin	None	
ML-192,192+	9 Pin	Grappler 9 Pin	
ML-193+	9 Pin	Grappler 9 Pin	
ML-292, 293	9 Pin	Grappler 9 Pin	
ML-393+	24 Pin	Grappler LX	6
400 & 800	Laser	Grappler LX/LS	
240	24 Pin	Grappler LX	
Olivetti Office USA			
DM 1005	9 Pin	Grappler 9 Pin	1
Olympia			
LaserStar6	Laser	Grappler LX/LS	9
NP30	9 Pin	None	1
NP80S	9 Pin	Grappler 9 Pin	1
NP136S	9 Pin	Grappler 9 Pin	1
PCPI			
Lsrimg 1000	Laser	Grappler LX/LS	9
2000, 3000	Laser	Grappler LX/LS	9
Panasonic			
1080i, 1091i	9 Pin	Grappler 9 Pin	3,11
1081, 1081i	9 Pin	Grappler 9 Pin	
1090	9 Pin	Grappler 9 Pin	4,11
1092i	9 Pin	Grappler 9 Pin	1
1124, 1524	24 Pin	Grappler LX	6,11,13
1592, 1595, 1695	9 Pin	Grappler 9 Pin	1
4420	Laser	Grappler LX/LS	9
4450, 4455	Laser	Grappler LX/LS	9

Printer	Type	Grappler	Notes
Printek			
930/dlx	9 Pin	Grappler 9 Pin	1
2000TX,2000CX	9 Pin	Grappler 9 Pin	1
Ricoh			
PC6000	Laser	Grappler LX/LS	
Seikosha			
BP-5420	9 Pin	Grappler 9 Pin	1
MP-1300AI	9 Pin	None	
SK 3000AI	9 Pin	Grappler 9 Pin	1
SK 3005AI	9 Pin	Grappler 9 Pin	1
SK 3500+	9 Pin	Grappler 9 Pin	1
SL-80AI, 130AI	24 Pin	Grappler LX	6
SP 180, 185AI	9 Pin	Grappler 9 Pin	1
SP1200	9 Pin	Grappler 9 Pin	1
SP 2000+	9 Pin	Grappler 9 Pin	1
SP 1000AP	9 Pin	Grappler 9 Pin	1
Sharp			
JX-720		None	
JX-9300	Laser	Grappler LX/LS	9
Star Micronics			
Gemini 10X	9 Pin	Grappler 9 Pin	
NB-15	24 Pin	Grappler LX	6
NB25-10	24 Pin	Grappler LX	6
NB24-10, 24-15	24 Pin	Grappler LX	6
NP-10	9 Pin	Grappler 9 Pin	
NX-15	9 Pin	Grappler 9 Pin	
NX-10, 100	9 Pin	Grappler 9 Pin	1
NX-1000, 1020	9 Pin	Grappler 9 Pin	1
NX2400	24 Pin	Grappler LX	5
SD10,	9 Pin	Grappler 9 Pin	
SG & SR	9 Pin	Grappler 9 Pin	
Toshiba			
P321	24 Pin	Grappler LX	12,13
P321SL	24 Pin	Grappler LX	13
P351C, P351SX	24 Pin	Grappler LX	13
PgLsr 12	Laser	Grappler LX/LS	9

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Key to Notes:
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2. Epson LX series emulation
3. Epson RX series emulation
4. Epson MX series emulation
5. IBM ProPrinter emulation
6. Epson LQ series emulation
7. Plug in cards emulate LQ-1000.
8. Toshiba P351 emulation
9. HP LaserJet Plus emulation
10. HP compatibility option required
11. No reverse line feed
12. Parallel extension needed
13. Slow printing / not recommended

NOTICE:
This chart represents the best current information, based on testing and data supplied by the printer manufacturers. Printers listed as compatible may still exhibit variations in multiple page alignment, slower print speeds and other minor limitations. Laser printers require a minimum of 1MB of printer RAM.

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M. Sprong
Forney, TX

Some People Never Learn
In your December '90 review of Fastback II you said it's a good idea to backup all the

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GUY KAWASAKI

Sleeping with the Enemy



Microsoft is a great company, and Bill Gates is a great CEO. But do you want to grant this man total control of what you can and cannot run on your computer?

Let me be subtle: Microsoft is the enemy. It seeks to dominate and control personal computing. Microsoft would like to ship every piece of software you use — even the operating system — and squeeze every other software company out of the market. Microsoft tolerates hardware companies such as Apple and IBM, seeing them as OEM suppliers. If there weren't such a low profit margin in hardware, Microsoft would be building computers too.

Don't get me wrong; Microsoft is a tremendous company and a great example of excellence in American business. I admire what Bill Gates and his company have accomplished. But I don't have to like it. And I don't have to stop trying to head off Microsoft at the pass before it achieves a monopolistic position. So here's my plan to save us all from being controlled by Microsoft.

Catalyze Microsoft Arrogance

First, let's help Microsoft become so arrogant that it no longer feels the need to introduce new products or enhance existing ones. Arrogance leads to the downfall of companies. As an example, Lotus springs to mind. In the late '80s, Lotus believed that its 1-2-3 spreadsheet was such a powerful standard that people would buy it "just because."

The problem is that Microsoft still believes that it must compete for business. It refuses to rest on its laurels (except with Microsoft File, which has set such a high standard for Macintosh database programs that it hasn't required revision). We must change this attitude and make Microsoft believe that we will buy its products "just because." Every time you speak to Microsoft employees, mention how wonderful all Microsoft products are, how Microsoft sets the standard in every category, and how you "would buy a Microsoft product just because of the Microsoft label." Try to do this with a straight face — especially those of you who own Microsoft Works, PowerPoint, and Microsoft Mail. (Hey, I never said that implementing my plan would be pleasant.)

Also, you can tell MBA students to go to work for Microsoft after graduation. (Sending over people who were laid off from Oracle would have the same effect.) The more MBAs at Microsoft, the better, because most MBAs are convinced they should be running companies after two years of reading case studies. As a rule of thumb, one MBA can neutralize the efforts of five good engineers.

Free Claris

On the one hand, we must ensure that Microsoft gets arrogant and begins to decay. On the other hand, we must ensure that other companies take up the slack — especially Claris. Claris was created for two reasons: to establish a kick-ass competitor to Microsoft and to end competition between Apple and its developers. Both reasons still make sense. Perhaps they make even more sense today, because of Microsoft's megalomaniacal tendencies. Unfortunately, Apple Kuwaited Claris, bringing it back into the Apple galaxy as an internal division. Why? Apple says it realized the importance of application software and wanted to control its destiny in this area.

I think Apple executives got sick of hearing Claris executives brag about their plans to go public and then do Microsoft Windows software. I can't blame the Apple executives for getting upset at this, but Kuwaiting Claris was the worst thing they could do.

Why? Because as an Apple division, Claris won't be a kick-ass software company. It will be subject to Apple's quarterly-earnings paranoia. Now Claris is going to be more worried about helping the mother hardware company than about delivering great software. Claris will be a dumping site for all the projects Apple doesn't want to manage — projects that no real software company would consider. I'm sure Gates thanked his lucky stars for the day Apple Kuwaited Claris.

(Speaking of Gates and Kuwait, let me interrupt to tell you a story that illustrates how powerful Microsoft has become. At the Apple Worldwide Developers Conference last May, Apple invited Bill Gates to help introduce System 7. Unbelievable! Tell me that George Bush went to the grand opening of Saddam Hussein's new chemical-weapons plant. Or that Iraq's ambassador had a goodwill tour of Northrop's stealth-bomber facility.)

My plan calls for the liberation of Claris. It should be an independent software company with the sole mission of becoming the world's greatest Macintosh developer — the Microsoft, if you will, of Macintosh. Claris should have a software company's perspective: Do what's right for *software* customers — not only for Apple customers who've bought the parent company's hardware.

Should Claris do Windows software? At first glance, the answer is of course not. Apple could retain 51-percent ownership and 86 every plan to do non-Apple-platform software. On

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closer inspection, the answer is not so simple. Imagine Claris providing the leading Windows applications. Then Apple (with its majority ownership) could threaten Microsoft the way Microsoft threatens Apple: "We don't like what you're doing, Bill. If you don't do things our way, we may not revise Windows-Write II and we may ship the NeXT version of Resolve sooner."

Every time you speak to an Apple employee, express concern for what's going to happen to Claris and request that Claris be an independent software company. It would help if you're from a large company (such as Boeing, General Dynamics, EDS, Kodak, or ARCO), because Apple tends to listen to companies that are potential purchasers of thousands of Macs. Apple will also listen to those who can say they're from a university such as Carnegie-Mellon, the University of Chicago, or Stanford, because Apple is afraid of the inroads NeXT is making in higher education.

Distract Gates

The Japanese have a saying: "Where the head goes, the body will follow." The head of Microsoft is Bill Gates. He is smart, tough, and ruthless — frankly, he'd be an ideal CEO of Apple, and this may be the subject of a column someday. Another part of my plan is to distract Gates — and the rest of Microsoft's upper management — so that they run the company less efficiently.

Here are a few ways to do this: First, those of you who are in graduate schools of business should invite Gates to speak at your school. While there, he may meet a business-school student, fall in love, and get married. This isn't that farfetched — just ask Steve Jobs. You know that anyone strong enough to marry Gates is going to demand a high level of attention from him. This will reduce his ability to make business trips, work late, and work at home.

Second, those of you who can write compilers should contact Gates and tell him that you've created a revolutionary object-oriented BASIC and that Claris is trying to acquire it. I don't know why, but Gates has this thing about BASIC. It would really bother him if Apple — er, Claris — were going to sell one.

Third, those of you who've always wanted to start a company should create one now and announce products in any category Microsoft doesn't yet occupy. This will force Microsoft to preannounce a competitive product in order to grab that market. Any of you who already have products that compete with Microsoft's should announce new versions so that Microsoft has to preannounce a new version in order to kill yours.

Fourth, those of you who decide to take my advice in the previous paragraph should call the Federal Trade Commission as soon as Microsoft makes its preemptive strike. Tell the FTC that Microsoft is competing unfairly with you. The FTC's telephone number is (202) 326-2222. On second thought, don't do this. If I had to bet on Microsoft or the FTC, I'd bet on Microsoft.

Create and Consider Alternatives

This brings me to the last part of my plan for overcoming Microsoft: All kidding (and the FTC) aside, the only thing that can really defeat Microsoft is superior products. This requires two things: superior products and people having an open mind about considering alternatives to Microsoft products.

The first necessitates that developers get off their self-pitying, fat derrieres and make great products. It also requires that venture capitalists take risks. (Otherwise they should just invest their funds in Microsoft stock and then go play golf and sip martinis at the Sundeck every day.) The second requires that people buy the best product for their needs — Microsoft or not.

Here are some alternatives to consider: CE Software's QuickMail instead of Microsoft Mail, WordPerfect or Claris MacWrite Pro instead of Microsoft Word, Aldus Persuasion instead of PowerPoint. Add to this list two products you probably haven't heard of. The first is an integrated product (code-named Terminator, which should give you an idea of its purpose) being created by Robert Hearn and Scott Holloway of Claris. Terminator will blow Microsoft Works into the weeds. And you can quote me. (It may be shipping by the time you read this column.) The second is an ingenious product that combines spreadsheet and database functionality. The Objective of creating this product is to take on Excel. However, I'm on the board of directors of the company that's creating it, meaning that writing about it is a conflict of interest, so I'll stop right here.

Don't kid yourself. Microsoft wants it all, from operating systems to application software. Only your ingenuity and open-mindedness can save the day. Are you a (wo)man or a Microsoft mouse?

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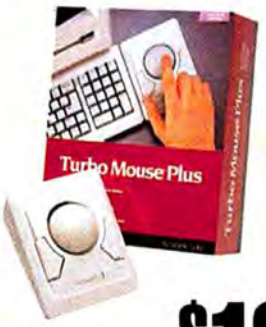
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02339 14 Helv Condensed 239
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02362 37 Univers 239
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00053 Multi-Ad Creator 455
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03895 Video Paint 278
Storm Technology
03993 Picture Press 1.03 120



StrataVision 3D v. 2.0

$348

StrataVision 3D has even greater power with Version 2.0. Extended modeling gives you more control over objects. Apply realistic textures, set reflectivity and soften shadows with improved ease. Animations of linked objects offer stunning results.

#04001 StrataVision 3D 2.0



Specular International Infini-D

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Includes NEC CD-ROM!

NEC Type Gallery

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Choose the CD-ROM Adobe type solution from NEC and get your first three authentic Adobe typeface families free plus a quality NEC portable CD-ROM reader. Hurry! Quantities are limited at this price.

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MacDraft 2.1

Easy to use MacDraft is the powerful low-cost solution to your precision drawing and drafting needs. Features include layers, scales, support for PostScript output, editable dimension lines, Bezier and spline curves and more!

#00429 MacDraft 2.1



Dreams 1.1

An excellent cost-effective choice for those who need more power and precision. Dreams includes standard drawing tools plus parallel line tool, glue and unglue, add and subtract, trim and fillet tools, true associative dimensioning, optional keyboard editing for precise resizing and moving, and much more!

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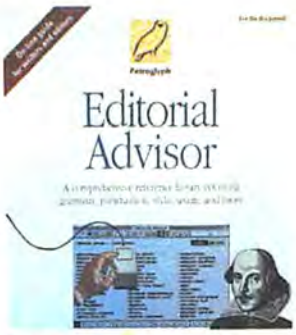
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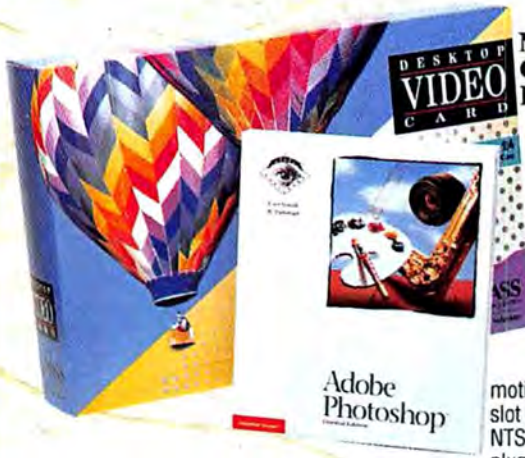
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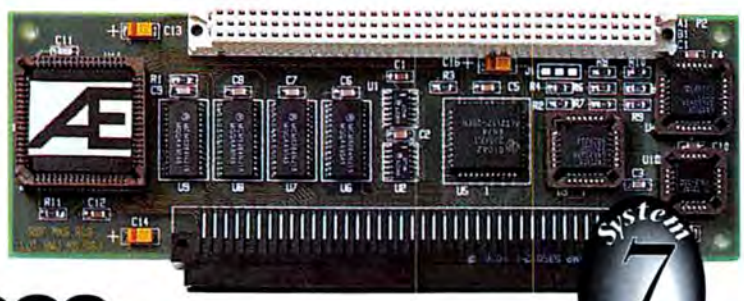
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#00833 QuickSilver

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02877	Fast Cache IIci	278

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03812	030 50Mhz IIci w/FPU	1,950

Dove Computer Corp

03228	030 Upgrade Mac II W/Virtual	528
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03752	Gemini II 030 40Mhz W/Fpu	1,850
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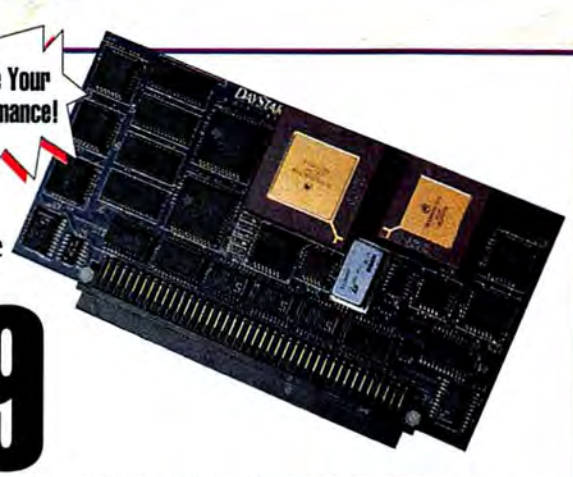
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#04057 PowerCache IIsi 40 MH
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03698 Tsunami 120 Mb Hd Q 1,125
03699 Tsunami 170 Mb Hd Q 1,225
03700 Tsunami 210 Mb Hd Q 1,325
03701 La Cie SilverLining V 5.31 149

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00176 Data Pack Cx 45 Rem 749
00164 DataPak MO 512 Mb Cartridge 208

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02181 Infinity 40 Turbo Hd Rem 699
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00450 645 Mb Ext Hd 2,599
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00182 Infinity 88 Turbo Hd 1,299
02851 Infinity Optical 600 Mb Hd 3,794
00442 PI 1.2Fh Gb External 4,149
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03536 CD ROM Drive XM-3201A 795

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Farallon Timbuktu 4.0 $129

Timbuktu is a versatile network application that allows you to observe or control another Macintosh over any AppleTalk network. It provides clipboard exchange and full background file transfer. This new version of the Eddy Award-winning software now supports color.

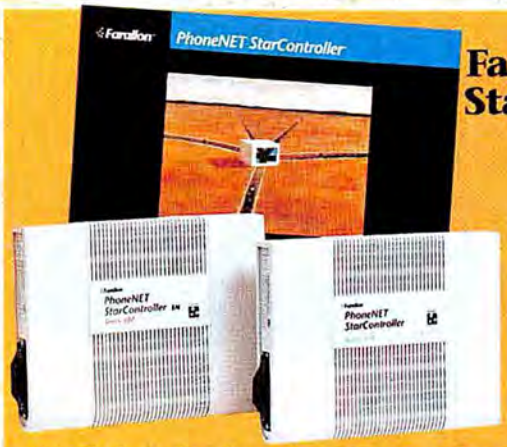
#00420 Timbuktu 4.0

LANZone Story

Wandering through the maze *of connectivity can be confusing. New products and hardware can make hooking up your Macs a perplexing problem for even the most experienced manager.*

Whether you like *LocalTalk or EtherTalk you can talk to us when buying for your network. Our experts can answer your questions on Ethernet and LocalTalk and also define those confusing terms like RJ-45, 10BaseT, thick and thin cabling and twisted pairs.*

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Farallon PhoneNET StarController®

$1588

The StarController EN repeats Ethernet signals over 12 ports and monitors network traffic and error rates. It's fully compliant with the IEEE 10BaseT standard, so it supports a variety of Ethernet devices, from PCs to VAX mini-computers. It continuously checks the connection to each device, automatically shutting off unused ports to prevent disruptive signal error. StarCommand 2.0 management software, included with the PhoneNET Star Controller EN, continuously monitors your network as a background application running under MultiFinder.

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$279 International Business Data Club

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00199 Te-447 Rj-45 Patch Panel 199
00826 PhoneNET To AppleTalk Adapter 8
00831 Repeater 309
00955 PhoneNET - DB-9 34
03475 Star Connector En Pn 501 120
00828 PhoneNET Din 8 (10 Pk) Pn 310 .. 197
02751 Star Connector (10Pk) Pn311 125
00832 PhoneNET - DIN-8 32

Nuvotech
01226 Turbo Net To AppleTalk Adapter 6
01929 Turbo Net St - DB-9 29
01918 Turbo Net St - DIN-8 29
03341 Turbo Net St 12 Pack DIN-8 278
01225 Turbo Net - DB-9 19
03340 Turbo Net 12 Pack DIN-8 198
01224 Turbo Net - DIN-8 19

Sitka Tops
02223 Teleconnector - DIN-8 22

Network & Mail Servers

Beagle Bros. Inc.
03219 Flash 124

Caravelle Networks Corp.
03887 Mac To Mac 10 Pack 218
03886 Mac To Mac 5 Pack 164

Casady And Greene
02873 AME Single User 158
02874 AME 1-5 Users 584
02875 AME 1-10 Users 848

Cayman Systems
03652 Gator Mail Q (100 Users) 3,350
03120 Gator Mail Q (10 Users) 675
03118 Gator Share Software 1,350

CE Software
03139 QuickMail 2.2.3 (50 User) 1,567
03138 QuickMail 2.2.3 (1-5 User) 207
03137 QuickMail 2.2.3 (10 User) 307

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00827 PhoneNET Check Net 63
02483 PhoneNET Liaison 3.0 258
01639 Traffic Watch 134
00420 Timbuktu V4.0 Single User 129
00422 Timbuktu V4.0 10 Pak 719
02418 Timbuktu Remote 122
02827 Timbuktu Remote Access Pack ... 844

Fifth Generation
01020 SuperLaserSpooler 2.0 Single 92

Gizmo Technologies
00143 Send Express 2.01 5Pk 125

International Business Software
03918 DataClub 10 Pack 525

Microsoft Corporation
00052 Microsoft Mail 3.0 Mail Server 245
00279 MS Mail 1-5 User V.3.0 268

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03172 Inbox 3.0 Dos 214
03171 Inbox 3.0 Mac 209
01853 Tops Flashbox Mac DB-9 117
03365 Tops Flashbox Mac DIN-8 118
01089 Tops Netprint 2.0 114
01844 Tops Repeater 118
03167 Tops 3.0 Network Mac 186

Technology Works
04029 GraceLAN v.2.0 50 User Pak 299

the LANZone

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Asante

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03648 Mac Con SE E 269

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03647 Mac Con + 30iE 64 304
00020 Mac Con+ 30iE 269
04031 MC + 30iE/Radius 269
03647 Mac Con + 30iE 64K Ram 304
00820 Mac Con + 30iE MC 64k Ram 399

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00228 Mac Con + 30i ET 64 304
03646 Mac Con+ 30i Et 269
04030 MC + 30iET/Radius 269

Macintosh II Family

03642 Maccon + II ET 64 304
03641 Maccon + II E 269

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00324 Mac Con + LC MC 379
00029 Mac Con+ LC E&T 269
00325 FNLC 10T 269

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03885 10 Base T Hub 699
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00181 Gator Box CS 1,955
03117 Gator Card E/II(IISeries) En 328
03116 Gator Box En 1,955

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03545 Daynatalk Speed Guard Collisi 52
02791 Daynatalk Connector 95
03549 Daynaport E/30 355
03548 Daynaport E/II 355
00003 Dayna Etherprint 10Baset 348
03546 Dayna Etherprint / Local Talk 348

Dove Computer Corp

02530 Ethernet Fastnet SE 340
02531 Ethernet Fastnet SE/30 340
02532 Ethernet Fastnet III 340

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03333 Star Controller EN 507 1,588
00829 Star Controller 300 Series 824
03902 Farallon Ethernet Mac II Card 358
03901 Farallon Ethernet SE/30 Card 358

Nuvotech

02184 Turbo Bridge 318
03121 Turbo Star 815
03119 Nuvolink II 271
00284 Nuvolink Sc-T 388
03115 Nuvolink Sc 369

Shiva

01406 Shiva Netserial 274
02801 Etherport IIL 498
02701 Etherport SE 350
02702 Etherport SE/30 350
02542 Shiva Telebridge 408
02700 Etherport II 350
02985 Ethergate 1,295
01615 Shiva Netmodem V2400 338
03251 Shiva Netmodem V.32 9600 1,165
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02685 Fast Path IV 1,885
NEW! Fast Path V (thick/thin) 1,889
NEW! Fast Path V (10 base T) 1,889

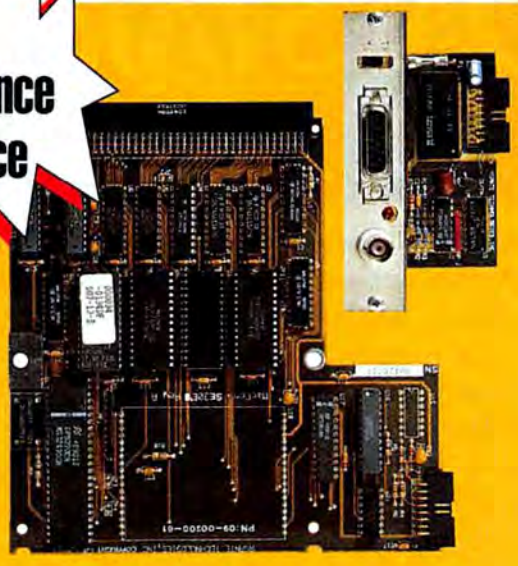


Shiva NetModem v.32 **$1165**

The NetModem V.32 is a 9600 bps modem that is designed to be shared over AppleTalk. The NetModem also includes Dial-In Network access software which allows a remote Mac or PC to dial into the network and use electronic mail, printers and other network resources.

#03251 NetModem

High Performance Low Price



Asante Ethernet Family

Asante Technologies' family of EtherNet solutions gives your Macintosh all the right connections. The MacCon+ network interface cards plug into your Mac to deliver high performance connectivity that's reliable and cost effective.



Technology Works GraceLAN 2.0 **$299**

GraceLAN lets you scan and profile every Macintosh, printer, PC, monitor, NuBus Card, network peripheral or SCSI device on any size network–without leaving your desk! Now GraceLAN 2.0 has added security, more detailed information and enhanced exporting capabilities. Also System 7.0 compatible.

#04029 GraceLAN 2.0

Mac to PC Connectivity

Dataviz

00039 MacLink Plus PC 5.0 128
03111 MacLink Translators 97

Dayna Communications Inc.

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SCSI PowerCard	0, 4, 16 MB			✓	✓	✓	✓	✓	✓	
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MICHAEL SWAINE

What Passes for Friendship



Excel 3.0 is one of the first major System-7-friendly applications. But with a friend like this, who needs enemies?

System 7 is not simple, and neither is 7-compatibility. Apple identifies three kinds: mere 7-compatibility, 7-friendliness, and 7-dependence. Compatibility buffs go beyond these categories to subcategories, identifying such deviant versions of 7-friendliness as Balloon Help the Bear and With Friends Like These. Microsoft Excel 3.0 conveniently demonstrates both.

MacUser reviewed Excel 3.0 in July (page 56) and gave it a high rating. It deserved every mouse it got for its ease of use and powerful features. Bravo. But then, because System 7 shipped after Excel 3.0 did, the reviewer couldn't write about Excel's 7-friendliness, either in a novice-user domain such as balloon help or in the developer domain of IAC (interapplication communication).

I can.

Balloon Help the Bear

"Help the Bear" is an old novelty song. In it, the singer addresses a well-meaning but inept friend, cataloging the disasters that befall him whenever the friend tries to help him and concluding by asking the friend, the next time he sees the singer in a wrestling match with a bear, to help the bear.

Balloon help may be the feature of System 7 most useful to novice Mac users. Just point at something on the screen, and a word balloon pops up explaining what the thing is, what it does, and why it happens to be grayed out at the moment. That's extremely useful; or at least it is if it is done right, and Apple did it right in implementing balloon help for System 7 itself, setting an example for all third-party developers. When it's not done right, both Apple and the user are justified in crying "Help the bear."

In Excel 3.0, Microsoft implemented balloon help twice, trying one approach with menu items and another with window objects. Both approaches exemplify Balloon Help the Bear friendliness.

In implementing balloon help for menus and menu items, Microsoft hit upon the economical strategy of reusing, verbatim, the text from its existing on-line help system. It wasn't a perfect match. Unlike System 7 balloons, which automatically size themselves to fit their text, the existing Excel help system uses a fixed-sized, one-line window, which enforces a style of writing notable for its paucity of punctuation, articles, detail, and clarity.

Here's how Apple documents a grayed-out Paste menu item: "Places the contents of the Clipboard at the location of the insertion point (or in place of the current selection). Not available because there is nothing in the Clipboard, or because the insertion point is not in a location where pasting is possible."

Here's how Microsoft does it: "Place data in selected cells."

Microsoft also tells us "Save document with a new name" to explain the Excel Save As menu item. This is clear enough as far as it goes, although it's not very helpful to anyone who'd appreciate knowing that it is through this menu item that you select a disk or folder for a document, apply 1 of 17 supported file formats to it, or make it available to other users via file sharing.

Still, reusing the old messages probably saved Microsoft a lot of time and money, a savings I'm sure it passed on to its customers. When it came to implementing balloon help for window items, though, Microsoft had to generate some fresh copy, and the results show what a billion-dollar company can do when it rolls up its sleeves. These balloons have complete sentences.

Of course, nothing is perfect. Microsoft could have given a bit more thought to the question of what people are likely to point at. Expecting novice users to be curious about what the boundary between cells does, or to imagine that it does anything at all, or even to conceive of the boundary between cells as an object is perhaps overly optimistic. True, users ought to be informed that clicking on a cell boundary does something and be told what it does, but perhaps a cell-boundary balloon is not the best tool for that job. In a way, such superfluous balloons compensate for all the balloons that Microsoft left out of the product, but only partially.

And despite my unabashed admiration for the grasp of the English sentence shown in the balloons for window items, there is room for improvement in the content of those sentences. Several balloons refer to something called the formula bar. There is a formula bar, and it's visible, but short of guessing or reading the printed documentation, I don't know how a novice would divine that this object is the famous formula bar mentioned in those balloons. A suggestion for Microsoft for the next version: Consider having an object's balloon identify the object if other balloons are going to refer to it by name.

And here's another suggestion for the next

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version: Consider having the balloon point at and document the object the user points at rather than some other nearby object. Just a thought.

These criticisms need to be placed in context, of course. Assuming that Excel's balloon help was implemented over a three-day weekend, I'd say it's a pretty darned good job. Furthermore, I suspect that Microsoft was operating on the principle that balloon help is not the product itself but a sign hung on the product and as such is not subject to the company's normal standards of quality. That would explain a certain unedited look. As a professional writer, I probably overrate clarity of communication, but I can learn. I can see balloon help as a sign hung on the product, or perhaps around the company's neck — the sign I see reads Shoddy Workmanship.

With Friends Like These

With Friends Like These is a different sort of 7-friendliness, the logical consequence of System 7's IAC, the Blanche DuBois of technologies, its success depending, as it does, on the cooperation of competitors.

The lowest form of IAC is copy-and-paste, which we already had in the dark ages before System 7. All it asks of competitors is that they agree on a few data formats. System 7's publish-and-subscribe is the next step up in IAC, but it doesn't ask much more of competing software vendors than copy-and-paste did. It is System 7's idea of copy-and-paste. Microsoft has implemented publish-and-subscribe in Excel 3.0, and it seems to work well.

But like copy-and-paste, publish-and-subscribe is merely data sharing. IAC's real potential is in letting applications communicate with one another on a functional level. If applications can open up their functionality to other applications, then we can access the power of the most-advanced statistical programs from our mundane spreadsheets, customize the features of our word-processing environments, and use scripting languages to control applications with a deftness and degree of control unknown today.

This demands a higher level of cooperation among competitors than simply agreeing on data formats. It places serious constraints on how applications are written. It also demands not only that cooperating competitors expose details of how their applications work but also that they explain how their competitors can take advantage of these details and that, at a certain level, those details be the same for all similar applications. The idea is that your spreadsheet program, say, ought to be able to request the services of your word processor, whatever word-processing program you may be using.

Microsoft probably thinks of balloon help as merely a sign hung on the product; the sign I see on Excel reads Shoddy Workmanship.

None of this is news to Microsoft, which has been in the System-software business longer than almost any other personal-computer-software company. It also has not escaped Microsoft, a multiplatform vendor, that whoever delivers a platform-independent implementation of this kind of IAC will clean up. Microsoft expects to be the company to do it. Toward that end, Microsoft has layered its own multi-platform approach to IAC on top of Apple's IAC. Microsoft's IAC uses the very technology that it attempts to supplant in the market.

And System software is a market as well as a tool for creating markets for application software. Apple, through its Claris subsidiary, is hinting about licensing its Apple-events IAC technology to run on other platforms and is known to have Windows-based applications in the works. In short, about the only Microsoft product Apple is not threatening to compete with directly or to drive out of existence through look-and-feel litigation is MS-DOS, the ten-year-old character-based operating system that hangs like an albatross around Microsoft's neck — right next to that sign.

And so we have not only cooperative competition within the context of an agreed-upon implementation of IAC but also cooperative competition (?) among IAC implementations. Although competition can stimulate innovation, the only apparent advantage offered by Microsoft's IAC is that it runs on Windows, a graphical user interface that looks good only when compared with MS-DOS. What's going on here is not competition to produce good products but jockeying for position.

I suggest to Microsoft that no amount of positioning can repair the damage done by treating customers with scorn.

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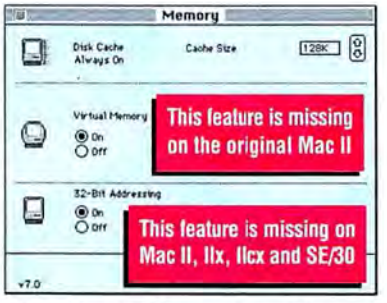
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The System 7.0 Memory Control Panel on a fully compatible Macintosh

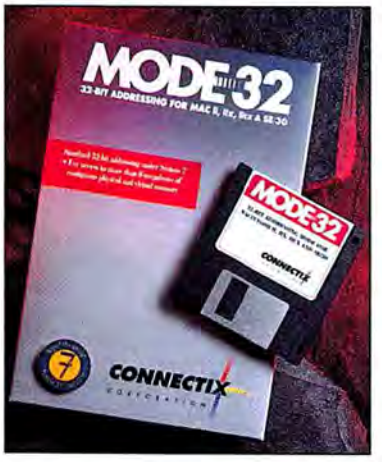
Your Mac II, IIx, IIcx or SE/30 lacks some important capabilities of the current generation of Macs. It won't run Apple's new standard 32-bit addressing mode which lets you use much more memory and run programs faster.

In fact, you'll discover that 32-bit addressing does not even appear in the System 7.0 Memory control panel.

That is why Connectix created MODE32,™ the simple, affordable and unique software solution that lets older Macs use 32-bit addressing.

MODE32 gives you access to more memory and boosts your productivity. With additional memory, applications can work faster and more programs can run concurrently.

MODE32 breaks through the eight megabyte memory barrier to access up to one full gigabyte of virtual memory, or as much physical RAM as you can put in your Macintosh.



You can get full use of 4MB and 8MB SIMMs or push virtual memory beyond the 13 megabyte limit with MODE32.

It's ideal for memory-intensive applications such as graphics, desktop publishing, multimedia, CAD, large spreadsheets and image processing.

If you want 32-bit addressing, which is standard on the current generation of machines, you need MODE32.

Get virtual memory on your original Mac II

If you have an original Macintosh II, virtual memory is also missing from your control panel.

Virtual memory is a standard System 7.0 feature that allows you to increase your Mac's system memory without having to buy and install additional SIMM memory.



Put the power of virtual memory to work for you with an MC73™ PMMU (Paged Memory Management Unit). It quickly drops into an existing socket designed specifically for this purpose.

Get virtual memory with the MC73 PMMU. It is the latest version of Motorola's PMMU and is the only one that is known to be fully compatible with the Macintosh II.

Be sure to get the full power of System 7.0

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Get more done in less time with HAND-Off. MacWEEK said: "It's so good that Apple should have put it in their system software." Here are some key features of the new HAND-Off II:

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- If the program you need is missing, HAND-Off's application substitution can open another automatically. End "Application Not Found" messages.
- Organize files and applications to work the way you do. The pop-up launch menu in HAND-Off II lets you open any file or group of files easily. Open all the spreadsheets, letters, charts and graphics associated with a project with just one click.

Get HAND-Off II, the productivity tool that MacUser rated five mice.

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NEW ON THE MENU

For what it's worth . . . Apple has a new monitor! It's the first large-screen color model it's ever made. This 21-inch display has a built-in antiglare, antistatic screen and ADB ports on the front panel. So why are we telling you about it and not showing it? Apple is going to sell it only in Europe. Just thought you'd like to know.

By Russell Ito

Bigger, faster, smaller: Hard drives used to be like American cars — make 'em bigger and faster. But now, as with cars, safety and smaller sizes have become important selling features. ➤ The Micro/Raven series, from MicroNet Technology ([714] 837-6033), is one of the fastest drive systems around. The system delivers screamingly fast sustained data-transfer rates with capacities starting at 624 megabytes and reaching 2.8 gigabytes. ➤ When it comes to data safety, it would be hard to beat the system we've heard about from Core International ([407] 997-6055). Boasting industrial-strength redundancy, Core's Intelligent Array Subsystems offer custom configurations that consist of five drives (four for data and one for error correction) plus backup power supplies and yet another spare drive. Capacities start at 1.2 gigabytes and go up to 4 gigabytes — multiple subsystems give you as many as 112 gigabytes. If a drive fails, the faulty unit can be removed and replaced with the spare drive and the data recovered — meanwhile the subsystem continues to handle host requests. ➤ And in the smaller-but-bigger category, Micropolis ([818] 709-3300) has introduced a 3.5-inch, 1-gigabyte drive mechanism, so you'll soon see gigabyte internal drives in machines such as the IIci that can accept only 3.5-inch drives. ➤ Finally, there's the Clipper, from Jasmine Technology ([800] 347-3228), a portable hard drive with capacities of 20 and 40 megabytes ($369 and $529, respectively) that's smaller than the average paperback book — 3 x 1 x 5 inches. Not only that but it doesn't need a power cable, because it draws power directly through the SCSI port. In fact, it plugs directly into the SCSI port (although it doesn't connect to a IIci directly). ➤ *Bigger* and *faster* are still the hard-drive watchwords, but the language is growing. Still no sign of airbags for hard-disk crashes, though.

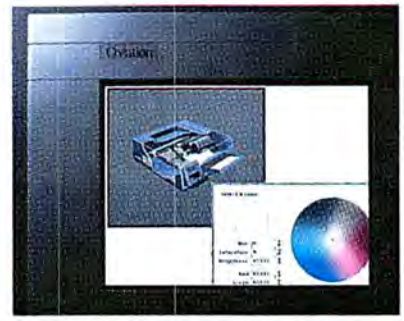




Up to Date . . .

Super 3D, Silicon Beach's 3-D-creation package, has been upgraded to version 2.5. It now boasts MacRenderMan support. (619) 695-6956. $495. ➤ QuickDEX, Casady & Greene's venerable personal-information manager, has finally been upgraded to QuickDEX II. Enhancements include 16K cards, time and date stamping, and user control of fonts and sizes. (408) 484-9228. $60. ➤ Address Book Plus, Power Up Software's personal-information manager, has been upgraded to version 2.0. Improvements include enhanced printing and field options as well as better importing and exporting. (415) 345-5900. $99.95.





Proxima's Ovation LCD projection panel (left) is an active-matrix unit that can reproduce more than 24,000 colors (above) and project full-motion video.

24,000 Fast LCD Colors

LCD projection panels are slow, and the color models have relatively poor color rendering, right? Wrong. Proxima's Ovation LCD panel marks a new standard in projection panels.

The Ovation unit is an active-matrix LCD panel capable of reproducing as many as 24,389 colors, from a pure white to a solid black. Because of its active-matrix design, it's also fast enough to project full motion video at 30 fps (frames per second), so video can be part of any presentation. To make the incorporation of video into a presentation easier, the Ovation supports NTSC (composite or S-video) input plus the connection of powered speakers. You can control the speakers' volume directly from the Ovation's handheld remote control.

Ovation also supports Proxima's Cyclops accessory (see New on the Menu, February '91, page 46), which makes it possible to control the Mac with a special pointer that, in effect, turns the projected image into a huge touch screen.

The Ovation unit weighs only six pounds, so it's ideal for presenters on the road or for conference rooms that don't have built-in projection systems.

Proxima Corp., 6610 Nancy Ridge Drive, San Diego, CA 92121; (619) 457-5500. $8,495.

Project Comes to the Mac

Announcing its first new Mac application in years, Microsoft has introduced Microsoft Project for the Macintosh, a project-management package that's already selling in a Windows version.

The first thing that most Mac users will notice about Project is how much its interface resembles Windows. Pop-down menus stay pulled down after the mouse has been released, for example. In many ways, Project is more Windows-like than any Mac application Microsoft has released so far. Microsoft's explanation is that the principal market for Project will be mixed environments that are already using the Windows version or offices that will need to share files with Windows.

Project's main claims to fame are its ease of customization and its flexibility. Project data can be entered into any view (Gantt, PERT, Task, and so on) directly, and multiple views of the same project can be studied at the same time. Users can create custom views that are stored separately from the data files, so once a view has been created, any project can be studied in that view.

Project offers resource leveling across multiple projects, and you can have resource calendars for an individual, group, or company.

Microsoft, One Microsoft Way, Redmond, WA 98052; (206) 882-8080. $695.



Microsoft Project for the Macintosh is a project-management package that will be most at home in mixed Mac and PC environments.

Faster Displays PDQ

Everyone wants a fast display, but not everyone has found Apple's 8•24 GC accelerated display card to be the answer. SuperMac Technology's new single-slot accelerated display card boasts double the GC's speed and costs $600 less.

SuperMac's Spectrum/8•24 PDQ card can drive 12- and 13-inch displays at 24 bits (16.7 million colors), 16-inch displays at 16 bits (65,536 colors), and 19- and 21-inch displays at 8 bits (256 colors). The card comes in NuBus and IIsi versions, and the IIsi card (Spectrum/8•24 PDQ si) comes with a PDS adapter.

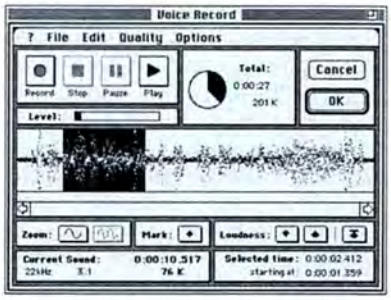
Instead of the GC's RISC-based graphics coprocessor, the PDQ uses a custom-built Toshiba chip. The PDQ NuBus block-mode transfer supports RS170 timing for better display on NTSC monitors. As with the GC, however, you still must convert the video signal to NTSC for display.

SuperMac Technology, 485 Potrero Avenue, Sunnyvale, CA 94086; (408) 245-2202. $1,399.

Sound Investments

Articulate Systems is now offering three sound-input-device packages — the most from any manufacturer.

Voice Record is a software-only product that offers sound recording and editing in a single window that can be accessed as a DA; through any application that supports Apple's Sound Manager, which came with System 6.0.7; or with Articulate Systems' Sound Manager, which works with System 6 or 7. Voice Record supports input from a variety of microphones and digitizers, including Articulate's mikes, Apple's mike, and Farallon Computing's MacRecorder. Compression and sampling rates can be as varied as needed, and the





Articulate Systems' Voice Record software (left) lets you record and edit sounds in a single window. Voice Impact (front in photo) is a tiny basic digitizer. The Voice Impact Pro (left in photo) is a high-quality unit with on-board DSP and digital-compression features.

software conveniently tells you how much memory and time you have available when you record a sound. You can cut out silences, rerecord specific segments, or rearrange the recording in the same window. Voice Record comes with SoundWave, a stand-alone application for advanced sound work, including special effects, mixing, and filtering.

Voice Impact is a tiny digitizer that comes bundled with Voice Record and SoundWave. Voice Impact includes built-in automatic gain control for better-sounding recordings.

Voice Impact Pro also comes with Voice Record and SoundWave software. This unit includes a high-quality unidirectional microphone, a built-in DSP chip, and on-board digital-audio compression (MACE [Macintosh Audio Compression Expansion]). Voice Impact Pro lets you record sounds in the background, and it compresses the sound before sending it to the Mac. Voice Impact Pro also offers line-in and mike-in jacks for audio input from external sources.

Articulate Systems, 600 W. Cummings Park, Suite 4500, Woburn, MA 01801; (617) 935-5656. Prices not set at press time.

Presentation Magic

By now, just about everyone knows that you can create wonderful-looking animated presentations in packages such as MacroMind Director, provided you're willing to give up a substantial part of your life to learn the program. But Paracomp has recognized that a lot of people want to create animated presentations without the hassle, so it has introduced a package code-named Magic.

Magic lets users create animated presentations that don't require any scripting. The interface involves a single small palette of tools that looks like the MacDraw tool set. Creating an object is as simple as drawing a shape and then pasting in an image — either still or motion. To move the filled object across the screen, you simply draw a path and tell Magic how long you want the move to take. Animated screens can be linked to create interactive presentations.

The package includes a collection of templates and clip art to make getting started even easier.

Paracomp, 1725 Montgomery Street, Second Floor, San Francisco, CA 94111; (415) 956-4091. $395.



Paracomp's Magic is an authoring package for presenters who want to create animated interactive presentations without scripting. Note its simple Tool palette.

NewsLine

Reports and Analysis

Apple Cuts Exec Pay

CUPERTINO, CA — As part of its latest restructuring effort, Apple Computer is expected to cut its top executives' salaries by 10 percent. However, CEO John Sculley's annual salary is reportedly going to be cut by 15 percent — from $2.2 million to $1.9 million.

RasterOps, Truevision to Merge

SANTA CLARA, CA — RasterOps and Truevision have announced an agreement in principle to merge the companies. RasterOps manufactures display systems for the Mac and the PC. The merger with Truevision, maker of the successful PC Targa desktop-video cards, gives RasterOps substantial credibility in the PC market. The merger was expected to be completed in August, pending stockholder approval.

Claris Clean Sweep

SANTA CLARA, CA — Following the example set by former CEO Bill Campbell, two other top executives at Claris have announced their plans to leave the company, now that it has been spun back into Apple Computer. Yogen Dalal, vice president of product development, and John Zeisler, vice president of marketing, have announced their resignations. Zeisler was expected to leave the company by July, and Dalal was expected to depart sometime in the third quarter. Richard Matthews, formerly of Aldus, was announced as Dalal's replacement. Claris also announced that Jim Davis, formerly director of System Software Marketing at Apple, who was the marketing director behind System 7, would join Claris as vice president of business development. Only two of the original nine management-committee members who formed Claris four years ago are still with the company.

Apple and IBM in Discussion

ARMONK, NY — In a classic example of strange bedfellows, IBM and Apple Computer executives have met to discuss the possibility of an alliance between the two companies. IBM was reportedly interested in licensing some of Apple's System-software technology, and Apple was said to be interested in one of IBM's microprocessors. Part of the motivation for the two adversaries to cooperate was believed to be the challenge presented to both companies by Microsoft.

INPUT DEVICES

Voice Navigator II

The future of computer interfaces is here today with Articulate Systems' Voice Navigator II.

Voice Navigator II is a true voice-driven interface for the Mac. Just as the mouse offered a better solution than cursor keys for some operations, the Voice Navigator complements both the keyboard and the mouse by using voice to control selected commands. As a result, it's easy to accomplish many tasks without ever moving the mouse or typing in keystrokes.

Recognize That Voice

The Voice Navigator II package includes Voice Control and Language Maker software, two manuals, the Navigator itself — a sleek, black SCSI box with switchable termination — and the Desktop Mike. Also bundled in the package are VoiceWaves, a set of advanced languages for use with different applications, and Voice Record, software for recording, editing, and playing back sound.

For all its design elegance, the Navigator box itself is strictly a sound digitizer and doesn't perform voice recognition. That's done in software. As with any sound device, the output quality depends on the input quality, so the Desktop Mike is a critical element of the package.



The Voice Navigator II is a sleek SCSI device that successfully brings a voice-driven interface to the Mac.

The Voice Navigator software has several components. Voice Control is an INIT with an associated control panel. The Voice Control software performs all the voice-recognition work. The package's other key software component is Language Maker, a DA that lets you edit and create the sets of commands (called languages) that control voice-driven applications. Language Maker is easily the most powerful part of the Navigator package as well as the most complex.

The Voice Navigator package offers two distinct file types: language files and voice files. Language files are lists of commands for use with specific voice-driven applications. The package comes with a substantial collection of ready-made language files designed for most common applications, and you can edit the files with Language Maker. Voice files, on the other hand, are digitized sound maps of the commands you've trained with the Voice Navigator. Every application that works with the voice-recognition system must have a language file and a voice file.

To start using the Voice Navigator, you open the Voice Options control panel and select the language and voice files you intend to use. You must also set several general preferences, such as the type of microphone you're using.

Once you've selected the language file that corresponds with the currently active application, you're ready to create a voice file. Even though you will have different language files for every application you use, you'll want to create only one master voice file for all the commands you've trained. That way, you'll have to train common commands, such as Quit and Print, once only. After that, every application that uses those commands can be activated by the voice-recognition system without additional training.

Training the System

You train your voice files by using Voice Commands, Voice Control's training mode. There you're presented with a hierarchical list of commands that parallels the menu structure of the current application. All File-menu commands, for example, are grouped under the File entry. Double-clicking on the menu name drops you down one level in the command hierarchy. To train commands to work with the Voice Navigator, you simply select the command and speak its name into the mike.

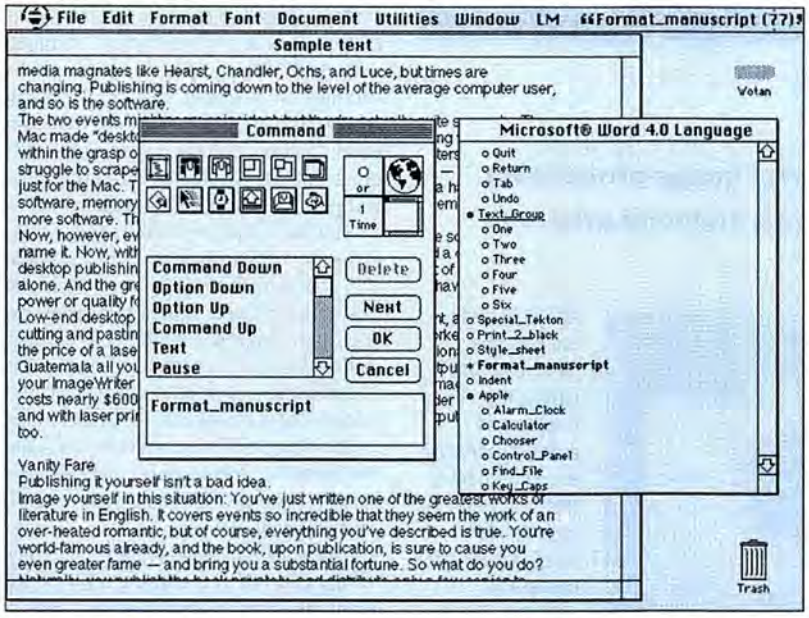
The key to an effective training process is to speak clearly and not waste time training the system for commands you rarely use. Because you can add trained commands at any time, it's always best to start with a small number and add more as the need arises. You can probably train an application's most commonly used commands in about 15 minutes.

You may want to rearrange your commands so that common operations, such as the Save command, are on the first level of the hierarchical command list. That way, to activate them, you don't have to preface them with the name of their respective menu. For example, by moving Save up in the hierarchy, you don't have to preface it with the menu name File every time. To make the change, open Language Maker and simply drag the command to its new position in the hierarchy.

Language Maker

Language Maker is the key to customizing the Voice Navigator. With it, you can create commands for hierarchical menus, dialog boxes, palettes (pop-down and tear-off), and tool palettes (fixed or floating). In addition, you can create macros that chain several commands and you can form groups of commands that perform custom formatting ("Tekton, 18 point, underline, red," for example). You can even enter predefined text strings, such as your company's name and address. Language Maker also allows you to create dummy commands, which don't initiate any actions but which prevent spurious recognitions based on common sounds in and around your work area (coughs, sneezes, and ringing telephones, for example).

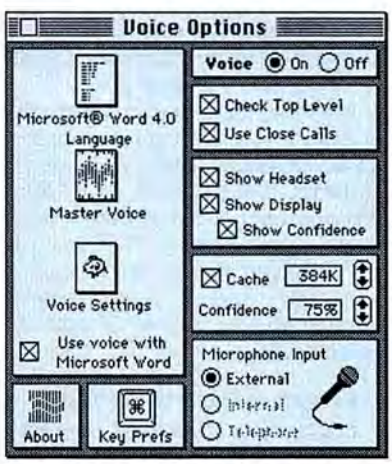
Unfortunately, depending on the action or application, setting up some commands to work with the Voice Navigator can be tricky. For example, certain actions, such



The Voice Navigator's Language Maker lets you edit and create the languages that control voice-driven applications, including macros. Here, the Command window shows a macro for Microsoft Word 4.0 that formats an entire document with a specific style sheet. Macros are easy to create with Language Maker, but editing them can be a problem.

as launching a document or accessing a DA's language, require you to write full pathnames.

But the Voice Navigator's biggest limitation stems from the fact that it's essentially performing mouse actions. Therefore, in order to pick a tool from a floating palette, the software must know the name of the palette and the location of the tool within that palette. Even more complex, if the application developer failed to name a palette, you must provide the Voice Navigator with its screen location. In such a case, you're forced to keep the palette in the same screen position as when you trained the command; otherwise, your voice-activated click will occur in the wrong place. And if you've forgotten where you placed the palette when you performed the training, or if you use another monitor, you're really in trouble.



You use the Voice Navigator's control panel to select language and voice files for your applications; turn the Voice Navigator system on and off; and set preferences, such as microphone type.

Caught in the Loop

The Voice Navigator's most serious flaw is its rigidly modal software. Initially, you find yourself in a seemingly endless loop, switching from an application to Language Maker, from Language Maker to Voice Commands, and then back to your application. And although you can keep Language Maker open while you're using a language, when you switch applications, Language Maker doesn't switch to the language for the new application. Articulate Systems is aware of these problems and promises a more integrated package in the next version.

Language Maker's macro editing is another disappointment. As good as Language Maker is for creating macros, it's not well designed for editing them. For example, you can't step through your creations if there's a problem. Furthermore, because everything is based on mouse actions and the system relies on applications for its operating information, what you see in the language file often has little to do with the actions you're performing. For example, clicking on several check boxes in a dialog box usually produces the action "click" in the language file. Unless you remember what you clicked on and in what order, editing the sequence amounts to a hit-and-miss affair.

The Bottom Line

Although most users will initially be attracted to the Voice Navigator's novelty, its most valuable asset is far more practical: It actually improves productivity. Far from acting as an alternative to a macro program, the Voice Navigator delivers a level of convenience that can't be matched by any traditional software package. If you're working with graphic arts, CAD, or DTP, you'll find that you can switch tools and apply style sheets without ever leaving your work area. Even if you work primarily with word processors or spreadsheet programs, you'll find that with the Voice Navigator, it's easier to focus on your work and not on remembering key combinations.

Moreover, the quality of the system's voice recognition is truly impressive. Even with its flawed interface, most users will be able to access 80 percent of the system's functions in two to three hours. The Voice Navigator is a revolutionary product that successfully delivers a new technology. If you're looking for the next step in productivity and want to experience the next generation in computer interfaces, the Voice Navigator II is it.

— Russell Ito

[*As we went to press, Articulate Systems was completing a System 7 version of Voice Control that will feature support for Apple events and other System 7 functions, such as balloon help. — Ed.*]

Get Info

Voice Navigator II

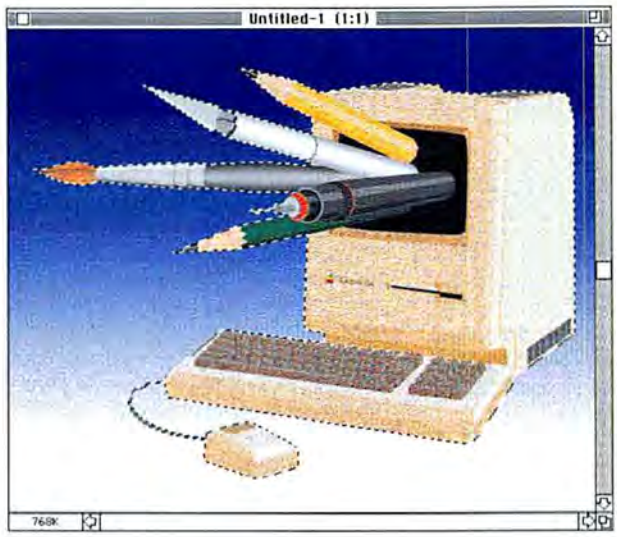
★★★★½

Manufactured by: Articulate Systems, 600 W. Cummings Park, Suite 4500, Woburn, MA 01801; (617) 935-5656.
Version: 2.0.
List Price: $795.

GRAPHICS & DESIGN

Adobe Photoshop

Version 2.0 of Adobe's powerful image-processing package places it on a par with high-end prepress systems.



Adobe Photoshop 2.0 provides on-screen CMYK editing of color images and powerful selection and anti-aliasing features. Here, an imported EPS image comes into Photoshop selected, with its edges anti-aliased against a gradient background. You can move the image for proper placement without losing the anti-aliasing.

With its sophisticated color-editing and image-enhancement controls, Adobe Photoshop 2.0 is an image-processing package that can hold its own against dedicated prepress systems. The new version features on-screen CMYK editing, a feature unavailable in any other package, either for the Mac or for the PC. Moreover, Photoshop's beefed-up functionality, teamed with a well-designed, efficient interface, gives it a decided edge over Letraset's ColorStudio 1.1.

No More Risky Conversions

Photoshop 2.0's enhanced prepress capabilities make it faster and easier than ever for you to achieve professional results. For color-separation work, version 2.0 lets you work directly in CMYK display mode, so you can view and edit high-resolution CMYK color scans on-screen without the time-consuming and risky process of converting them to RGB. This new feature vastly improves screen-to-output fidelity, making Photoshop's results far more predictable than those of ColorStudio for color separation. A separate 24-bit-color window displays changes made to any individual channel.

Vastly improved controls for screen- and output-color calibration also boost Photoshop's appeal for prepress operations. The program has separate UCR (Undercolor Removal) and GCR (Gray Component Replacement) controls and provides full support for output devices that use Level 2 of Adobe's PostScript language, which greatly improves print quality and minimizes moiré patterns with color separations. In addition, Knoll Software's Gamma control panel is bundled with the new version.

The Curves dialog box lets you make extremely precise color-correction modifications, and the Levels dialog box contains new tools for automatic selection of optimum color and brightness values for an image. Version 2.0 features a new Info window that acts as a densitometer, displaying CMYK and RGB values for any pixel in an image. This window also provides feedback on such aspects as length and angle of lines as you use different tools, a feature that comes in handy if you have to repeat actions. All in all, these improvements essentially eliminate the prepress advantages of ColorStudio over Photoshop.

Photoshop 2.0 opens and rasterizes EPS images at any resolution, complete with anti-aliasing and font and color support, so you can easily incorporate Adobe Illustrator-compatible files into your continuous-tone images. The program imports images on a floating layer and places them with anti-aliased edges.

The horizontal and vertical scales of incoming EPS images are also adjustable. The only drawback is that custom PostScript fill patterns can't be rasterized. Although Photoshop 2.0's EPS rasterization doesn't offer the full feature set of ColorStudio's Shapes Annex, it is integrated into the program. Shapes Annex, on the other hand, is a separate package. Furthermore, Photoshop's rasterization handles complex EPS images that usually choke Shapes Annex.

Photoshop 2.0 now supports duotones — as well as the monotones, tritones, and quadtones supported by previous versions of Photoshop — in a separate display mode. You can specify color and specific brightness ranges with the program's new Pantone color picker, and Photoshop separates each ink color into its own output plate when it prints an image. The Pantone color picker, which is based on the Radius Pantone Color Toolkit, maps any color to its closest Pantone equivalent.

For improved precision, a new Bezier pen tool creates irregular selections, much as Adobe Illustrator's pen tool does. You can select regions to be made into alpha channels or masks, and it's easy to take any selected area (such as a region grabbed with the magic-wand tool) and automatically turn it into a pen path. You can also save these paths as EPS clipping paths for use as masks in Illustrator.

Photoshop 2.0's System 7 support is just short of superb. The program supports 32-bit addressing, which lets it take full advantage of large chunks of RAM for dramatic screen-redraw performance and minimal disk thrashing. TrueType fonts are fully anti-aliased, and Photoshop supports core Apple events and the Publish function. Missing, however, is support for balloon help.

Everything Old Is New Again

In addition to Photoshop's completely new features, the program has several small but important enhancements of the standard Photoshop tool functions. For example, you can now set the eyedropper tool to pick up the *average* color of an area (either 3-x-3- or 5-x-5-pixel matrices)

rather than the exact color of individual pixels, which is extremely useful for dealing with scanned images that don't have uniform color regions.

Another handy improvement lets you set the program to alert you with a beep when a processing function has finished. And the Fuzziness parameter in the magic-wand and paint-bucket tools has been replaced by the more powerful Antialiased check box, which automatically determines the optimum values for anti-aliased edges. Perhaps one of the handiest Photoshop 2.0 improvements lets you specify a virtual-memory disk and make it independent of the disk on which your Photoshop Preferences folder is stored. If you run out of disk space when working with large color images, this approach makes it easy to redirect your virtual-memory drive without having to move your Preferences folder.

Mac animators will appreciate Photoshop 2.0's ability to convert RGB images into indexed color images. You can dither images to a predefined color palette imported from other painting programs or to an exact number of colors, a key feature when working with programs such as MacroMind Director or Paracomp's FilmMaker.

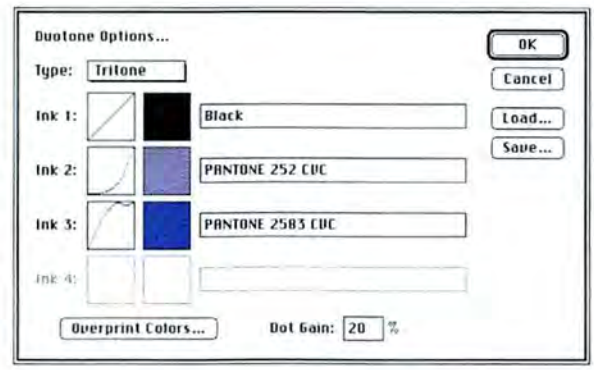
Photoshop's PICT Resource module lets you open PICS animation files (or any other type of document or application), extract the PICT resources (or PICS frames), and import them into Photoshop for processing. Unfortunately, there is no module for exporting PICT resources, so you have to recompile processed PICTS into a PICS file by using an external application.

Photoshop 2.0's filters are sorted into groups to speed up the process of location and selection, and there is a multitude of new special effects. The Pointillize filter turns any scan into a Seurat painting. The Crystallize filter creates a stained-glass effect. Wind adds three different directional streaks, and Tiles shatters an image into a definable number of panes with controllable offsets. In addition, you can now apply the Spherize effect either horizontally or vertically.

Videophiles will appreciate Photoshop's NTSC Legal and De-Interlace filters. These come in handy for automatic adjustment of harsh saturation and for cleaning images grabbed from video sources. You can use the Displace filter to automatically apply Impressionist filters to an image as well as to create a multitude of other effects. In essence, the Displace filter shifts pixels in one image based on the brightness values of another image.



Photoshop's new special-effects filters modify your images in interesting ways. Shown here are examples of filtering a single image with Displace, Emboss, Pointillize, Wind, Tiles, and Crystallize.



Using a separate display mode, Photoshop 2.0 lets you create accurate duotones — as well as monotones, tritones, and quadtones — with any Pantone or process-color ink.

The Bottom Line

With version 2.0, Adobe has added more power and precision to the Mac's most popular image-processing package. Direct CMYK editing and more-powerful color-calibration and image-enhancement controls make the package an indispensable tool for prepress work.

Moreover, Photoshop 2.0's new functions are cleanly integrated with the standard Photoshop interface, so users already familiar with the package don't have to make major readjustments to take advantage of the upgrade. If you already depend on Photoshop for your image-processing work, you'll clearly benefit from upgrading to version 2.0. No professional graphic artist should be without it.

— David Biedny

Get Info

Adobe Photoshop

$5,5,5,5,5

Published by: Adobe Systems, Inc., 1585 Charleston Road, P.O. Box 7900, Mountain View, CA 94043; (415) 961-4400.
Version: 2.0.
List Price: $895.

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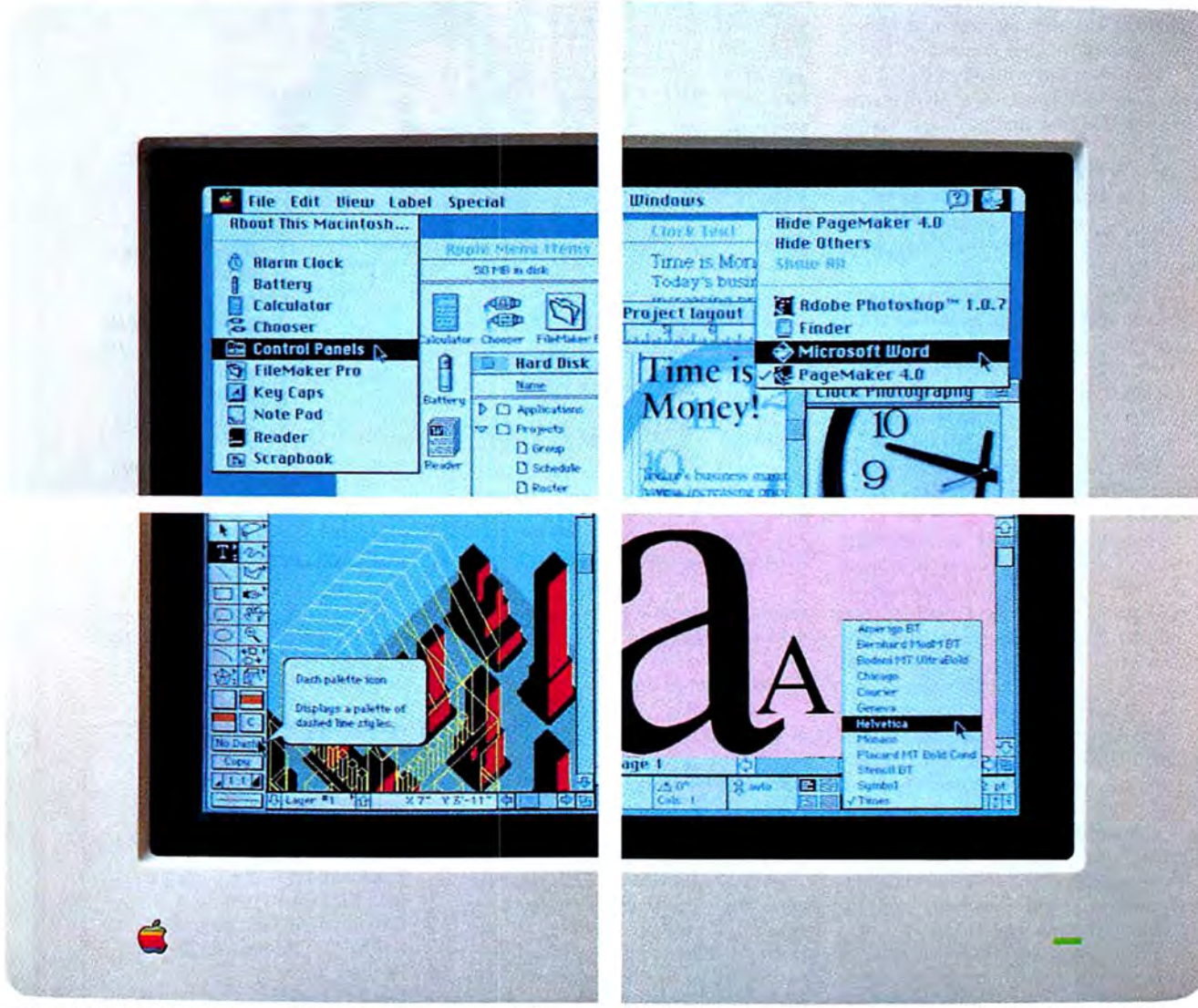
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the Macintosh on your desk.

We've also made Macintosh easier to use. For instance, take a look at Apple Balloon Help,™ our new on-line help feature. Point to an item on the screen, and a balloon pops up next to it, telling you what it's for. So applications are quicker to learn, and easier to make the most of.

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With System 7, there's a big improvement in big type. Thanks to Apple's TrueType™ font technology, you get perfectly smooth letters on the screen, no matter what their size, along with more professional-looking output. And you don't need the Font/DA Mover. To install TrueType fonts, just drag their icons into the System Folder. (Ditto for desk accessories.)

Open an application. Work. Save. Quit. Open another application. Until now, that's how you've probably moved from, say, a word processing program to a spreadsheet. With improved multitasking, you can keep several applications open at once, and choose between them with a mouse click. So you don't have to stop what you're doing to print, search for files, duplicate files, or share data.

Using applications simultaneously can demand lots of memory, but with System 7 you aren't likely to see a not-enough-memory message. Because there's virtual memory.* When you need extra memory, just tell System 7 to use the spare room on your hard disk. Your Macintosh will work without interruption, and so will you.

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System 7 gives developers a far-reaching new set of tools, enabling them to offer applications that do new things for you. For example, to the fame and success of cut and paste, we've added publish and subscribe. Change something in one document, and it can change—automatically—in every document where it appears. Even if the documents are in different applications or on different computers across a network.

System 7 also enables any Macintosh on a network to share documents and applications with any other.

We could go on. But the main point is really this:

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To run System 7, all you need is 2 megabytes of memory and a hard disk. (If you don't have enough memory, you can purchase it from your authorized Apple reseller.)

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CAD

Blueprint and PowerDraw

Blueprint and PowerDraw add new features for 2-D technical drawing and drafting.

The Mac 2-D-CAD market is crowded with nearly a dozen programs that offer similar features. New versions of Blueprint and PowerDraw offer noteworthy enhancements designed to set them apart from the competition. Blueprint 2.0 is an entry-level CAD package that offers unparalleled grouping and organizational features. PowerDraw 3.0, on the other hand, is a more powerful program designed for advanced CAD users.

Blueprint 2.0

Blueprint 2.0, from Graphsoft, is a less expensive, 2-D version of the company's MiniCad+ 3.0. What's missing is MiniCad's programming environment and integrated spreadsheet/database program. Like MiniCad, version 2.0 of Blueprint uses Graphsoft's SmartCursor, which helps you locate and position geometry with on-screen cues.

The SmartCursor makes it easy to place and align objects. As you move the cursor over a drawing's geometry, it highlights midpoints, endpoints, centers, intersections, and tangents. Unfortunately, you can often use this function only with the first object selected. For example, you can't use it to create a line that is tangent to two circles.

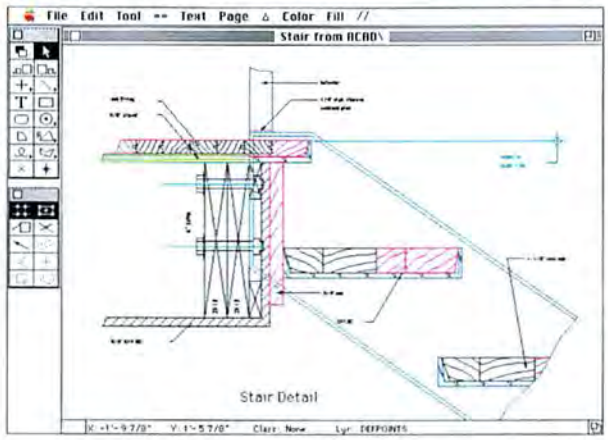
Blueprint supports most common 2-D entities such as lines, double lines, rectangles, circles, arcs, ellipses, splines, and polygons. It includes standard Mac fonts and fill patterns, and line styles are available from a pull-down menu.

Many Blueprint functions, such as Duplicate, Send to Front/Back, Reshape, Smoothing, Align, and Lock, are similar to those of MacDraw, but Graphsoft has added some innovative extras that make Blueprint unique.

One example is the Group command. Once objects are grouped in Blueprint, you can work on the group as if it were a separate drawing, which makes it easy to edit grouped objects in a congested area of a drawing. Another useful feature lets you assign abstract classes to geometric entities. For example, you can assign the class Chair to a chair symbol, place the symbol several times on the drawing, and selectively choose to hide or show all the chairs. These capabilities augment Blueprint's superb symbol libraries.

Blueprint also has an excellent layering system that lets you assign default colors to each layer's fill or pen patterns for easy differentiation. You can choose to hide layers, and each layer can have its own drawing scale. These features make Blueprint a powerful tool for organizing and arranging complex drawings.

Blueprint can perform Boolean operations, such as joins and intersections, on selected entities. This can be useful if you need to use one shape as a "cookie-cutter" to cut another shape or if you need to generate the geometry that results from the overlapping intersection of two objects.



Blueprint 2.0 is essentially MiniCad+ 3.0 minus 3-D, a programming environment, and a spreadsheet/database program. Here, an AutoCAD DXF file was converted by Blueprint's built-in DXF converter.

For many 2-D-CAD users, dimensioning is an important feature. Blueprint provides only basic linear-style dimensioning commands, which may be adequate for basic architectural drafting. However, for mechanical drafting, the necessary radial, diametral, and ordinate dimensioning functions are missing. There is also no way to specify tolerances. For Blueprint (and MiniCad+, for that matter) to be genuinely competitive in the 2-D-drafting arena, Graphsoft must significantly enhance the programs' dimensioning capabilities.

The Blueprint package includes a built-in DXF import/export facility that adds to its value, but compared with DXF converters from Claris, Engineered Software, and Generic, Blueprint's converter consistently missed entities and dimensions. Blueprint also offers an EPS export capability that worked flawlessly. This allows placement of Blueprint images directly into DTP documents without the loss of precision that occurs with PICT files.

PowerDraw 3.0

The roots of Mac CAD can be traced back to the original MacDraw, and that heritage is readily apparent in PowerDraw 3.0, from Engineered Software. PowerDraw relies on a single tool palette with pop-outs, scroll bars, and rulers along the left and top of the drawing window.

To position geometry at a specific location, you simply hold down a predefined letter key, such as *C* for center or *T* for tangent, and PowerDraw snaps the geometry to the nearest corresponding point. It's not as automatic as Blueprint's SmartCursor, but it's easy to use and it works under all conditions. An indicator on the left side of the title bar shows you which geometric condition is currently active.

At some levels, PowerDraw has much in common with Blueprint. They both support similar geometric entities and Mac fonts and fill patterns. Both programs offer Boolean joins and intersections and many of the typical MacDraw-style commands. Blueprint may have an advantage in layering, groups, and classes, but PowerDraw provides a more complete set of 2-D-CAD tools.

PowerDraw has a full complement of dimensioning commands that will satisfy most drafting needs. It has a centerline tool that automatically creates centerlines on

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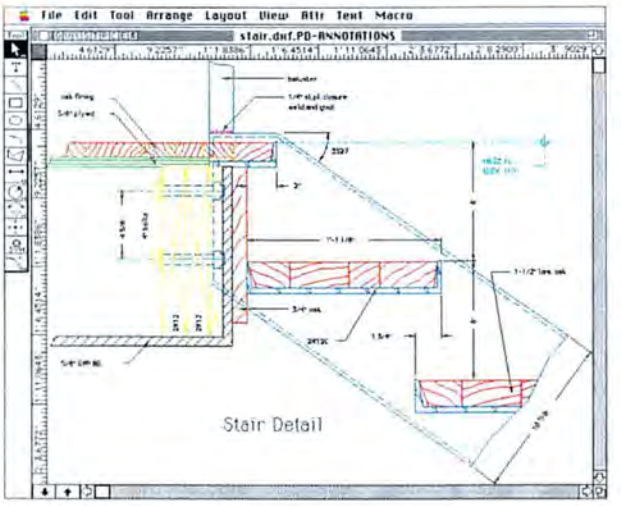
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† Contact QMS for availability of network options.

*Patent pending



PowerDraw 3.0 features more-advanced CAD features, such as dimensioning and plotter support. However, to convert this AutoCAD DXF file, you must purchase a separate $275 translator.

selected objects. By holding down the Option key when selecting a dimension tool, you get a dialog box that allows you to specify or change units, accuracy (number of decimals), placement, tolerances, arrowhead orientation, and other dimensioning parameters. It would be better, however, if this dialog box was modeless and available at all times.

In addition to the standard Mac fill patterns, PowerDraw also offers true vector-oriented cross-hatching, which provides more flexibility and is more easily plotted than the standard patterns.

It's easy to customize the program by associating keystrokes with any command or tool palette. You do more-extensive customization in the built-in Pascal-based macro environment. If you have some programming experience, you'll be able to create custom programs easily.

PowerDraw offers no native import/export capability other than for PICT files. Engineered Software offers a separate PowerDraw 3.0 Translator for $275. It reads the native PowerDraw format, DXF, Adobe Illustrator, PICT, MacDraw, HPGL, and Claris CAD. The Translator writes to the PowerDraw, EPS/Adobe Illustrator, PICT, and DXF formats.

Unlike Graphsoft, Engineered Software includes a built-in plotter driver that supports many plotters from companies such as Hewlett-Packard and Houston Instruments. It also supports plotting to a disk file for subsequent transfer.

The Bottom Line

For those whose 2-D-CAD needs don't involve dimensioning or plotted output, Blueprint is an affordable solution that's easy to learn. It offers acceptable performance, high-precision database programs, and unparalleled grouping and organizational features.

At an entry-level price of $295, Blueprint is likely to attract cost-conscious buyers and may be a good choice for owners of the newer, low-cost Macs. However, Blueprint's tutorial ($89) and plotter driver ($300) are sold separately, which detracts from the package's price-point advantage.

For serious 2-D-CAD users who require dimensioning and plotting, PowerDraw 3.0 is a solid tool that teams power with ease of use.

— James K. Anders

Get Info

Blueprint

$$$

Published by: Graphsoft, 8370 Court Avenue, Suite 202, Ellicott City, MD 21043; (301) 461-9488.
Version: 2.0.
List Price: $295; tutorial, $89; plotter driver, $300.

PowerDraw

$$$$

Published by: Engineered Software, P.O. Box 18344, Greensboro, NC 27419; (919) 299-4843.
Version: 3.0.
List Price: $795.

GRAPHICS & DESIGN

Ray Dream Designer

Its awkward interface aside, this new 3-D design package is distinguished by fast ray tracing.

Ray Dream Designer is fast. The ray-tracing speed of this new 3-D-design package, which includes both modeling and rendering tools, can't be matched by any other 3-D software. Despite the overall quality of the images you can create with Ray Dream Designer, however, the program's cumbersome interface makes the modeling process downright painful.

3-D Competition

Designer falls into the same midrange category as Paracomp's Swivel 3D Pro and Strata's StrataVision. Although its $895 price tag puts it beyond the reach of casual users, Designer still costs much less than high-end, professional-level 3-D software such as VIDI's $3,600 Presenter Professional. Yet for certain design tasks, Designer competes on a par with Presenter Professional.

To run Designer, you need a Mac equipped with a Mac coprocessor (IIsi owners can upgrade with a NuBus or 68030 DirectSlot Adapter Card), 4 megabytes of RAM, and a hard-disk drive. The 24-bit-display capability is nice for viewing your finished artistry but not required.

What sets Designer apart from all other packages is its speedy, ray-traced renderings, which it executes in the background without MultiFinder. The resulting surfaces are not only more detailed and reflective than those created with other packages but the program also does an excellent job of shadow casting and provides a wide range of transparencies. Overall, the results it produces are close to photo-realistic.

Modeling

Objects are modeled in Designer's LightForge module. Unfortunately, the program creates a separate file for each individual polygon that you build. In a

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September 1990

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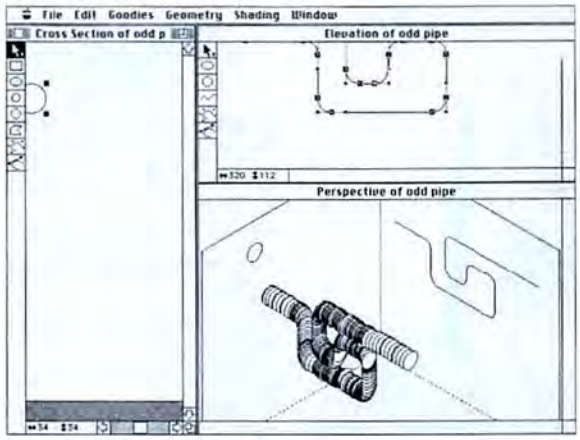
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Ray Dream Designer includes a 3-D modeler and renderer in a single package. Objects are modeled in the LightForge module, where Designer's tools are excellent for lathing and extruding.

complex model, this can quickly add up to hundreds of files you must manage by filename alone.

Before you begin drawing, you must decide whether to use lathing or extrusion to describe your 3-D objects. The program then creates a cross section and assigns either depth (for extrusion) or revolution (for lathing) to create the object in 3-D. A real plus is the program's support for asymmetrical models.

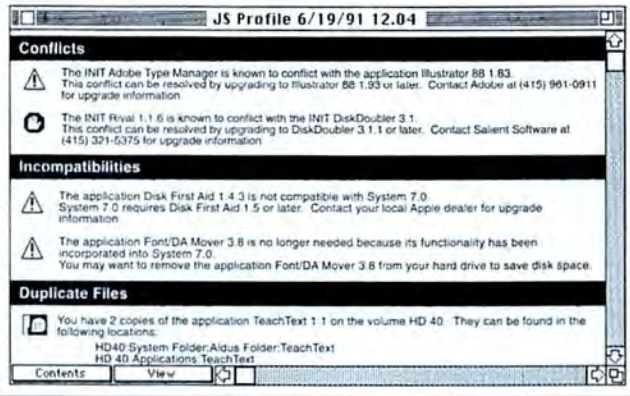
As you model objects, they hover in virtual space, projecting profiles onto the bottom, sides, and background of the design space. You can select or modify an object only by clicking on its projections —never on the object itself, which is a far-from-intuitive process. Colors and surface effects are assigned through a Lighting dialog box that previews the effects in real time.

Designer is one of the first 3-D modelers to offer Bezier splines. However, Designer's splines are difficult to modify once they've been set, because the program doesn't provide any indicators for selected control points. Furthermore, Designer doesn't let you select multiple points, and you can't assemble splines in a free-form manner to define surface edges.

From existing PICT images, Designer can create polygons that you can edit from within the program using an auto-tracing function called Extract Contours. However, this is where the real weakness of the program's single-polygon-per-file requirement becomes apparent. If you're working with text, for example, you must create a different file for each letter of a word in an existing drawing. In addition, extracting the contours of letters with inner surfaces, such as *D* or *Q*, is particularly time-consuming.

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However, LightForge really shines in 24-bit PICT and texture mapping. The program fits an existing PICT file or texture like a decal onto an object, keeping all of the object's geometry intact and providing guidelines for exact positioning. For this task, Designer's interface earns a big plus for making the positioning and scaling of PICT images, which is a headache in most other 3-D programs, so easy. The program provides a dozen editable textures.

Rendering and Scene Description

Once you've modeled objects in Designer's LightForge module, you assemble and render them in the SceneBuilder, which provides three windows for manipulating objects. You gather objects for your scene in one window and then drag them, one by one, into the Perspective window's stage area, where you scale and position them. An extents box displays the boundaries of objects in 3-D. A third window lets you assign light sources and specify groups of objects.

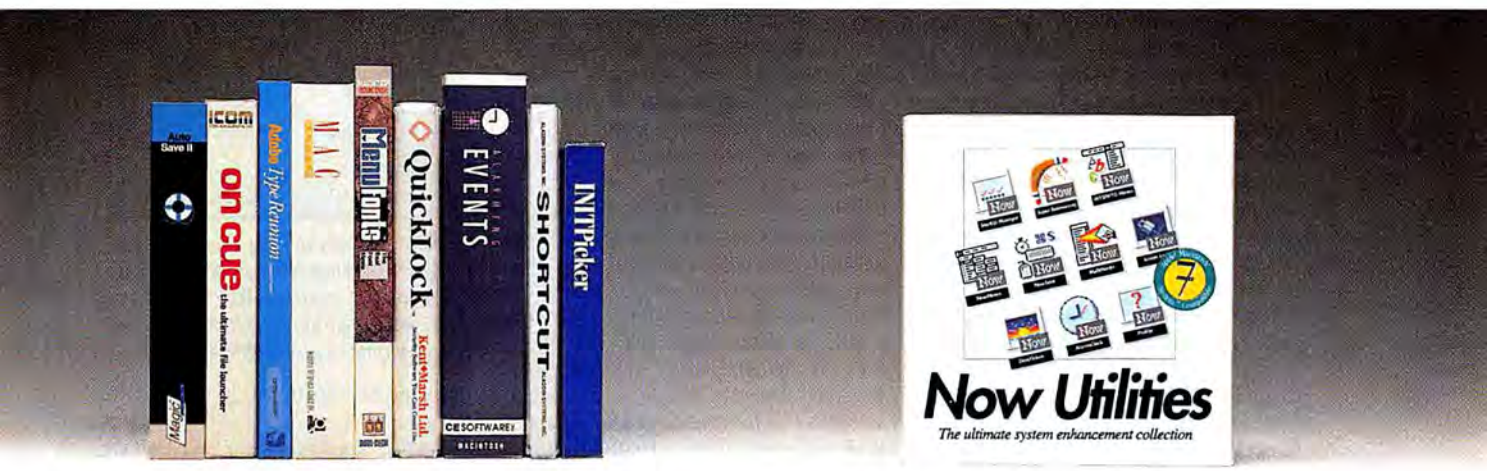


This rendering shows off some of the effects created in Ray Dream Designer's modeling module. The wall is bump-mapped to achieve texture, and PICT images are mapped onto the Earth and the bottle. Rendering time for the 1,024-x-768 file was 3 hours, 50 minutes, using a Mac II with a 33-megahertz Marathon 030 accelerator.

SceneBuilder also lets you position PICT images against the back wall of the scene for backgrounds.

When your 3-D scene is complete, Designer provides a preview that lets you check for proper positioning and scaling of objects. In Preview mode, you can also view the scene from each of its light sources. This is a big plus, because getting the lighting right is half the battle in good 3-D rendering.

Once all your objects and lights are positioned properly in the Perspective window and your viewpoint is set, the scene is ready for rendering to a 24-bit PICT file. SceneBuilder provides batch queueing, plus a valuable interrupt feature for the ray tracer. In general, it's wise to



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render a small version, or postage stamp, of your scene. That way, you can do a final check before committing the considerable computer time required for full-scale rendering. Even with a fast ray tracer such as Designer, large, complex images may take several hours to render.

The Bottom Line

Ray Dream Designer lacks advanced CAD features for drafting production and is strictly designed for still images, not for animation. One of the major drawbacks of the program is that all of its objects must exist in separate files, making it difficult to build scenes with interrelated parts that require exact positioning and scaling.

Moreover, once you're in SceneBuilder, you can't modify object attributes. For that, you must go back to the LightForge modeling module. Although it's nice to have a modeler and a renderer in the same package, Designer would be a far superior product if the two modules were more integrated and all objects were saved in a single file. However, in Designer's favor, the quality of the finished artwork is excellent and somewhat offsets the irregularities of the interface. Another plus is Designer's unparalleled ray-tracing speed.

The level of power offered by Designer and other modelers in its class can be alternately exhilarating and frustrating. Each package has its own unique interface designed to shield users from the complexities of mechanical drafting in 3-D. If you're creating objects that can be described by lathing or extruding, Designer is as good as it gets. On the other hand, if your work is based on convoluted surfaces, exacting detail, or complex objects with exact surface definitions, you're better off considering high-end abilities such as those offered by Presenter Professional coupled with MacRenderMan, or AutoCAD teamed with the ElectricImage Animation System.

— Doug Barnard

Get Info

Ray Dream Designer
$$$½
Published by: Ray Dream, Inc., 1804 N. Shoreline Blvd., Mountain View, CA 94043; (415) 960-0765.
Version: 1.0.
List Price: $895.

DATABASES

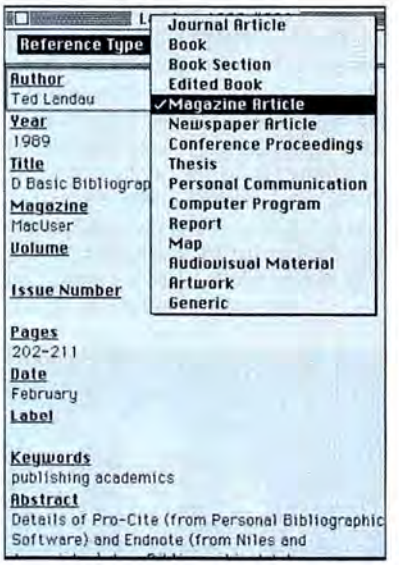
EndNote Plus, Bookends Mac, and Publish or Perish

Three bibliographic-database programs take the drudgery out of citations by automatically formatting references.

If you've ever tried to use a general database program to create formatted bibliographies from references, you know why specialized bibliographic databases exist. The primary problem is that different publications have different rules for the inclusion, ordering, and formatting of information in a reference. This set of rules is called a *style*. For example, one publication may require the date to be listed in parentheses near the start of a reference, whereas another requires it without parentheses at the end of a reference. Either the full name of a journal or its abbreviation may be required at different times. The variations for formatting authors' names are too numerous to describe. Similarly, bibliographic databases must accommodate a variety of reference types — from journal articles to edited books to audiovisual material.

With a good bibliographic-database program, you should need to enter each reference only once yet still be able to format the output according to any of a half dozen or more styles. These programs also should adequately manage more-general database functions, such as search and select — for instance, find references to all books written since 1988 that discuss color monitors.

The three programs reviewed here are all upgrades to programs that were previously reviewed (see "D Basic Bibliography," February '89, page 202).



EndNote Plus lets you use a pop-up menu to select reference-type formats. You can link a group of reference-type formats as a style, which then serves to determine the overall format of a bibliography.

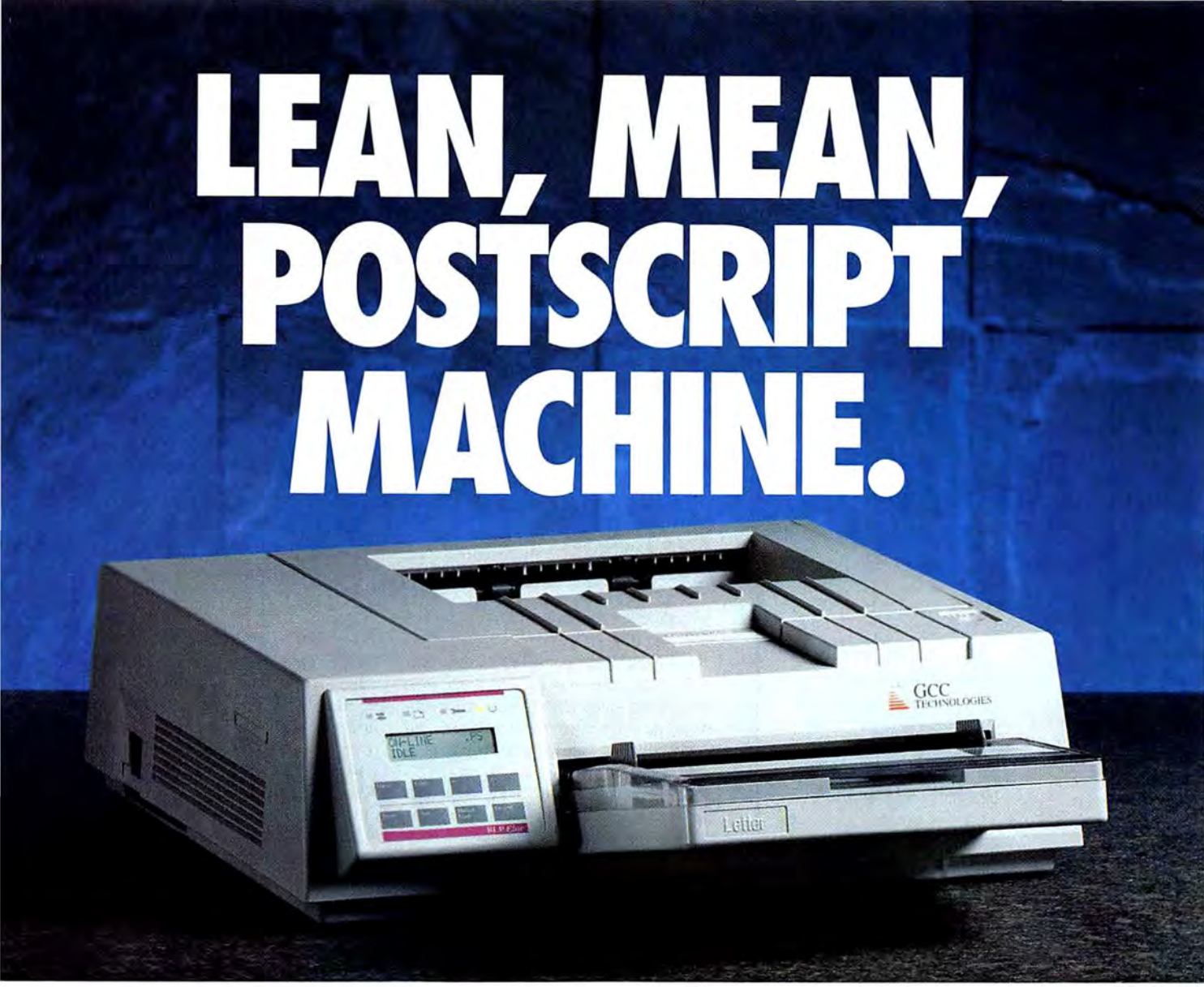
EndNote Plus

EndNote Plus is an enhanced version of the original EndNote (which remains available as a separate product). As with the original, the stellar attraction of EndNote Plus is its ability to take a manuscript created in a word processor and use it to generate the appropriate bibliography, complete with in-text citations. EndNote Plus is compatible with Word, WordPerfect, WriteNow, MacWrite (but not MacWrite II), as well as text documents.

With a word processor and EndNote Plus open at the same time (or using EndNote Plus' DA version if you aren't running under MultiFinder), you can copy references from EndNote Plus and paste them into any location in your text. This creates a coded in-text citation marker for that reference that looks something like this: [Landau, 1989 #972].

Alternatively, you can type citation entries yourself, without even having EndNote Plus running. You then open the word-processing document from within EndNote Plus and select the Format command. This causes a bibliography of all cited references to be appended to the document. Both the original citations and the bibliography are formatted and sorted

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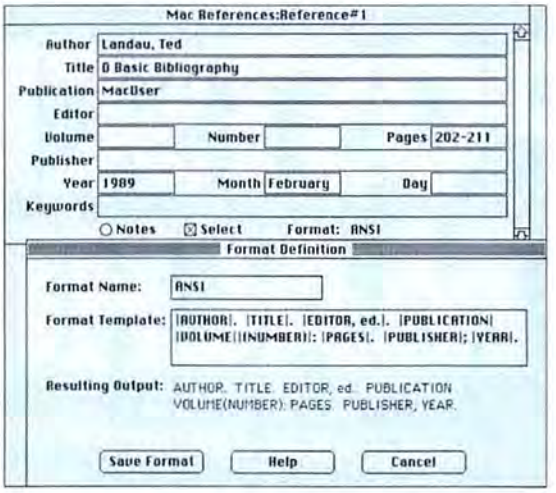


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The layout for the reference listings in Publish or Perish is fixed; you can change the names of the fields, though you have to do it an entire file at a time. The style-format definition is limited to just a single reference type. You can't link formats of different reference types into an overall style.

according to the rules of the selected EndNote Plus style.

EndNote Plus comes with 14 predefined reference types and 12 predefined publication styles. Most users will probably find this sufficient. If not, you can freely edit every attribute and create new styles.

New features in EndNote Plus include enhanced Find and Sort capabilities. Simultaneous sorts are now possible on any of up to five fields. The Find command now allows an unlimited combination of Boolean searches on all or any specified combination of fields. Unfortunately, it can be difficult to correctly set the parentheses locations that distinguish between, for example, [(Smith and Jones) not 1988] and [Smith and (Jones not 1988)].

Users who frequently search large data files will appreciate EndNote Plus' new QuickFind function, which creates an indexed file that can dramatically speed up search times. Using a file of 1,700-plus records, a search that takes about six seconds without QuickFind took less than one second with QuickFind. The main drawback is that the indexed file is at least twice the size of the original file.

Formatted bibliographies can now be printed out directly from EndNote Plus, meaning that you don't have the references to a word-processor file first. It's also possible to set up on-screen displays of formatted bibliographies, using the Copy Formatted and Show Clipboard commands.

Bookends Mac 2.0

Bookends Mac, from Sensible Grammar, is a set of interrelated HyperCard stacks. Although it can, like EndNote Plus, create formatted bibliographies, it lacks some of EndNote Plus' flexibility. For example, the number of fields for all references is fixed, and you can rename fields only for an entire file at once. This limits the ability to customize records to reflect the differences between reference types (journal versus book, for instance). Also, the program doesn't include any predefined reference-type templates to aid in setting up new format styles. This means that you must reenter the definition of a "journal type" for each different style. Finally, although Bookends Mac contains several options for varying the formatting of authors' names, it can't vary the journal title between abbreviated and full.

Bookends Mac can directly import data downloaded from national on-line databases such as Medline or Dialog. EndNote Plus requires a separate application, EndLink, to do this.

After scanning a word-processing document for citations, Bookends Mac generates a bibliography of all cited references, alerting the user to any unmatched or multiple-matched references. Bookends Mac permits font and style variations within a bibliography. By saving the bibliography as an RTF (rich-text format) file, you export citations to most word processors without further modification. With version 2.0, citations can be converted either to numbers (sequenced in the order cited) or to names. However, unlike EndNote Plus, Bookends Mac has no option for specifically matching the formatting of citations to different publication styles. Bookends Mac does include journal-reference-formatting definitions for several dozen publications. Still, only a single complete style (for the Modern

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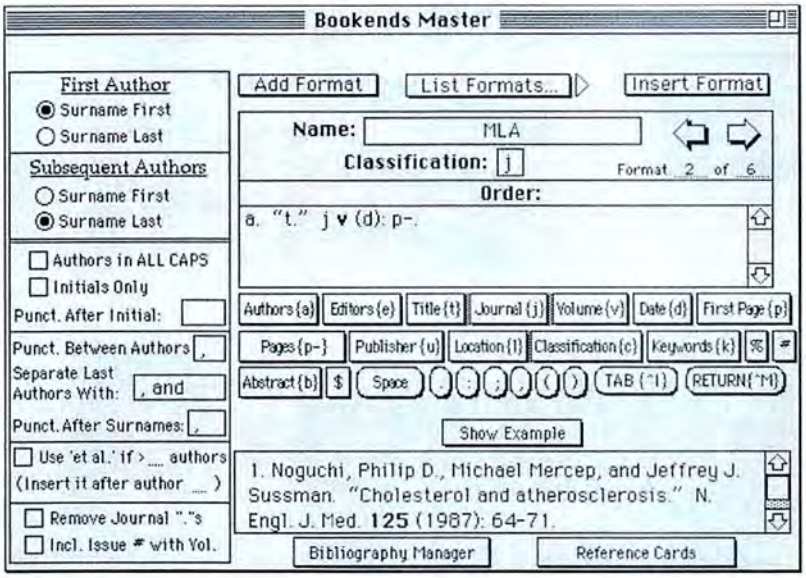
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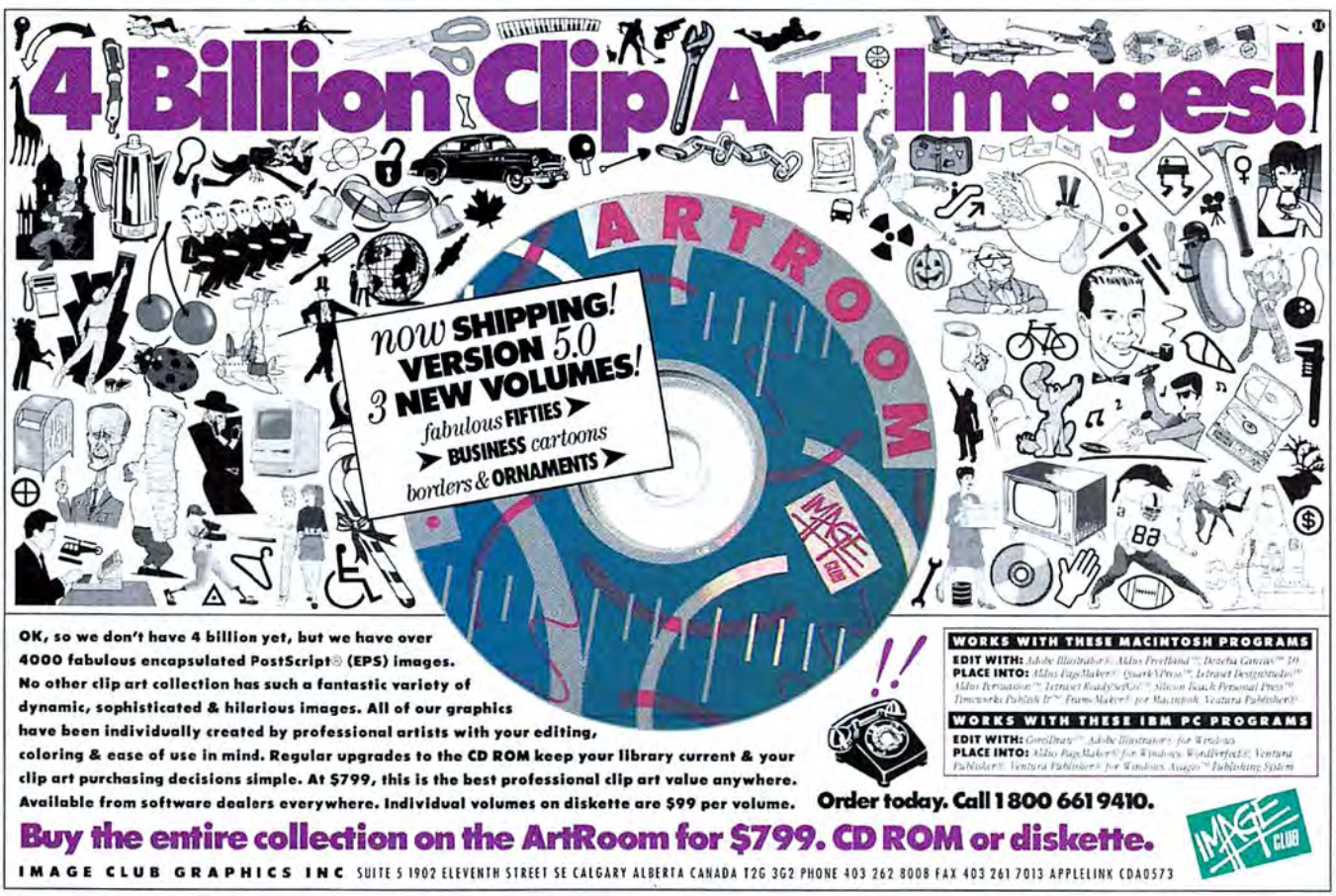
Version 2.0 of Bookends Mac has a faster Find function than its predecessor, but its Select function is still restricted to only one Boolean type (AND/OR) per search. Another retained inconvenience is that each separate data file requires starting with a new copy of the original master stack. There is no equivalent of Open or New commands. Printing out a bibliography requires navigating an irritating maze of buttons and cards.

Publish or Perish 6.0

Publish or Perish 6.0 meets the minimum criterion for a bibliographic-database program: It formats bibliographies using different styles. Nevertheless, Publish or Perish remains a program with limited capabilities. It can't accommodate multiple reference types for a given style, it can't create bibliographies from in-text citations, and each bibliography can have only one font and style. Fields can't be added, deleted, or given more than one name per file. The only advantage of



Bookends Mac has six formats for the popular MLA (Modern Language Association) style. This one describes the format for journals (j). Although Bookends Mac contains several options for varying the formatting of authors' names (see left side of the screen), it can't vary the journal title between abbreviated and full.



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Publish or Perish is its simple design, which makes it the easiest program to use. It also has extensive on-line help that almost eliminates the need for documentation (which is skimpy in any case).

Notable improvements added to recent versions include enhanced search (Boolean searches) and sort (on-screen sorts) capabilities. Also, it can now export files in RTF.

The Bottom Line

EndNote Plus remains a top choice in this category, fine-tuning EndNote's already superior ability to create formatted bibliographies and in-text citations. To this, it adds enhanced search and select features and improved printing options. However, these improvements do not seem sufficient to justify a separate new product with a substantial increase in price. EndNote Plus should simply have been an upgrade to EndNote.

Bookends Mac emerges as a capable, full-featured bibliographic-database product, although it still can't match the more flexible formatting options of either EndNote or EndNote Plus. Publish or Perish, despite its attractive rock-bottom price, cannot seriously compete with the other programs.

— Ted Landau

Get Info

EndNote Plus

♦♦♦♦♦

Published by: Niles & Associates, Inc., 2000 Hearst Street, Berkeley, CA 94709; (415) 655-6666.
Version: 1.0.
List Price: $249.

Bookends Mac

♦♦♦½

Published by: Sensible Software, Inc., 335 E. Big Beaver, Suite 207, Troy, MI 48083; (313) 528-1950.
Version: 2.0.
List Price: $129.95.

Publish or Perish

♦♦½

Published by: Park Row, Inc., 4640 Jewell Street, Suite 232, San Diego, CA 92109; (619) 581-6778.
Version: 6.01.
List Price: $74.95.

GRAPHICS & DESIGN

ColorSqueeze, ImpressIt, and PicturePress

Three compression utilities shrink the size of large still-frame images.

Small is definitely better than big when it comes to the file size of photographic-quality color and gray-scale still images. Whether scanned or painted, such files occupy large amounts of disk space and are unwieldy to send across networks or over phone lines. Three software packages: ColorSqueeze, ImpressIt, and PicturePress, specialize in shrinking large images to more-manageable file sizes.

JPEG Quality

With the advent of the JPEG (Joint Photographic Experts Group) image-compression standard, it's now possible to squeeze almost as many compressed images onto a floppy as require a 20-megabyte hard disk in uncompressed format, without significant loss of image quality. ColorSqueeze, ImpressIt, and PicturePress all offer JPEG-compatible compression.

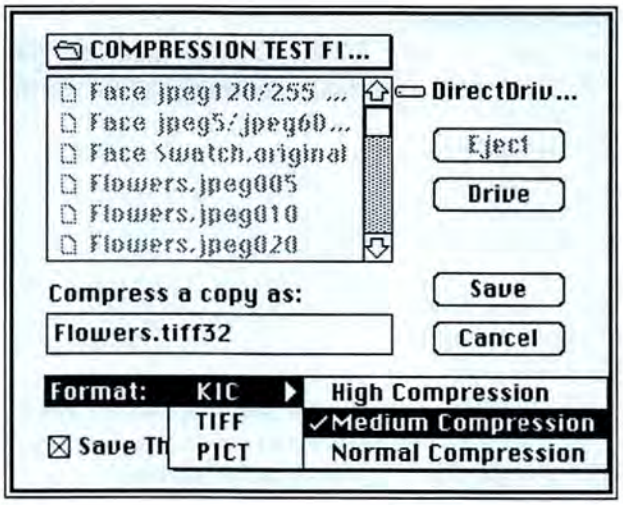
JPEG compression goes well beyond the file-size reductions provided by data-compression programs such as StuffIt Deluxe and Disk Doubler. It examines an image in 8-x-8-pixel chunks and performs several mathematical operations on the pixel data. The result is that very small values are needed to describe any given pixel. The process discards data that's visually irrelevant to the image and then compresses the remaining relevant data. This slightly degenerative compression is dubbed "lossy," because some data is lost in the process.

ColorSqueeze, ImpressIt, and PicturePress all let you select degrees of compression for your files. Each degree directly affects the amount of visual data that's discarded as the compression process reduces the file size. Consequently, there's a trade-off between compressed file size and image quality.

Incredibly, even at compression ratios of 20:1, compressed images appear visually identical to the originals. Differences are noticeable only on close inspection.

ColorSqueeze

Eastman Kodak's ColorSqueeze program opens 24-bit PICT and TIFF images and offers three degrees of compression: Normal, Medium, and High. The highest compression setting reduces file sizes by almost 100 percent, although it does so



ColorSqueeze is an image-compression utility that makes most of its options available in one dialog box. However, the program offers only three compression settings.



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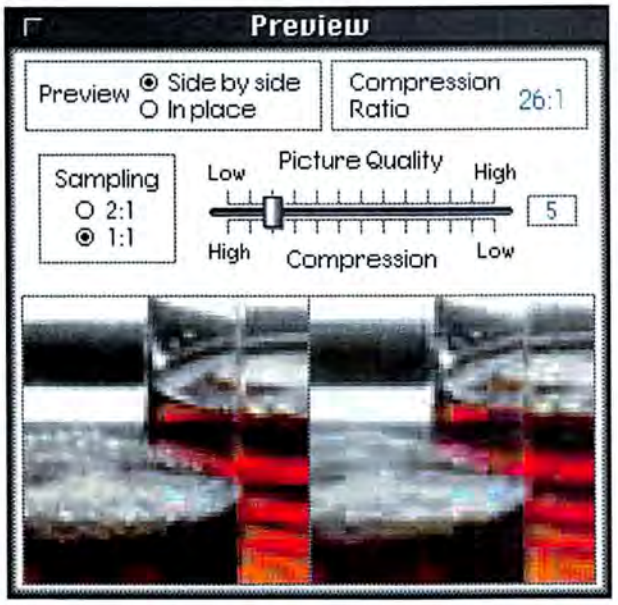
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ImpressIt's time-saving Preview window displays a selected portion of an image as it will appear at the current compression-ratio setting, so you can view the effects of compression before processing the entire image.

with a noticeable loss in image quality.

ColorSqueeze provides zooming controls that are crucial for examining the effects of compression on fine image details. The software also lets you create collages by copying and pasting rectangular areas of images. The program even has built-in printing for image archiving.

You can save thumbnail versions of your images along with the compressed files. Decompressed files can be saved in PICT or TIFF format as well as in the ColorSqueeze KIC format. All decompressed images are converted to 32-bit-per-pixel images, even if they began as black-and-white. For this reason, ColorSqueeze is not an ideal program for compressing gray-scale images or monochrome paint files.

The ColorSqueeze package includes a 422K decompression-only utility that you can distribute freely for noncommercial use.

Overall, ColorSqueeze is easy to use and offers the essentials for compressing files. With browsing, zooming, cutting, pasting, and printing included, it's both multitalented and self-sufficient. The program's three compression settings are limited compared with those of ImpressIt and PicturePress, however, and the package lacks a Photoshop plug-in module.

ImpressIt

You might expect Radius, a hardware company, to emerge with a compression board, but ImpressIt is a software-only JPEG solution. ImpressIt compresses 32-, 16-, and 8-bit-color and 8-bit gray-scale PICT or TIFF images and provides a wide range of compression ratios.

The software's claim to fame is raw speed: Its performance approaches that of hardware solutions. Compressing a 276K PICT image took 5.5 to 7.5 seconds, depending on the image quality, on a Mac IIfx. On average, ImpressIt is two to three times faster than either ColorSqueeze or PicturePress. ImpressIt seems ideal for users of the single-slot Mac LC and IIsi, but the software runs on all Mac IIs and the SE/30 with at least 2 megabytes of RAM. For those worried about memory, ImpressIt has built-in virtual-memory capabilities that use excess disk space for manipulating large images.

ImpressIt lets you preview the effects of selected compression ratios on small image areas, so you can experiment with various settings before committing to full image processing. For quick browsing through image files, you can save thumbnail snapshots of compressed images.

A plug-in module for Adobe Photoshop



PicturePress lets you set the compression ratio for selected areas of an image. The result preserves image quality for selected details without reducing the overall image-compression ratio. A drawback is PicturePress' lack of support for TIFF images. However, a new version is in the works that will process not only TIFF files but also images compressed by ImpressIt.

Get Info

ColorSqueeze

$$$½

Published by: Eastman Kodak Co., Printer Product Division, 343 State Street, Rochester, NY 14650; (800) 242-2424.
Version: 1.0.
List Price: $179.

ImpressIt

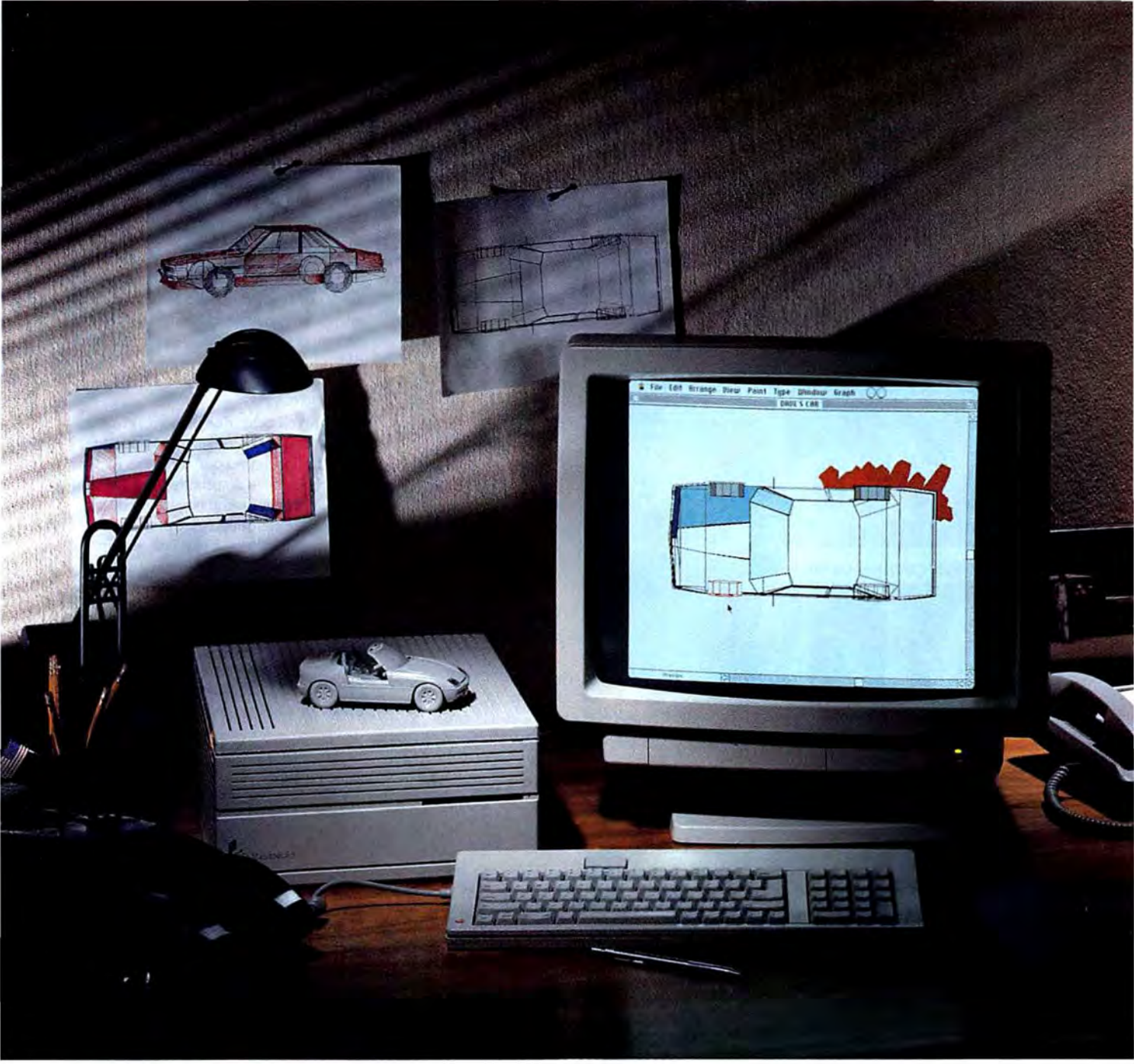
$$$$½

Published by: Radius, Inc., 1710 Fortune Drive, San Jose, CA 95131; (800) 227-2795 or (408) 434-1010.
Version: 1.1.
List Price: $179.

PicturePress

$$$$

Published by: Storm Technology, Inc., 1101 San Antonio Road, Mountain View, CA 94043; (415) 691-1111.
Version: 1.03.
List Price: 1.03 or 2.0, $199; with PicturePress Accelerator Card, $999.



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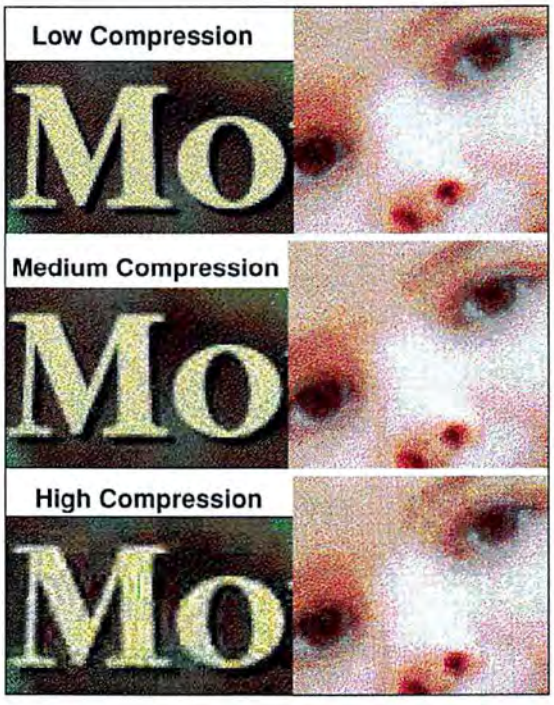
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As JPEG compression ratios increase (from the top image to the bottom), images tend to become mosaics of small gradients and other artifacts that are especially noticeable around hard-edged details.

works well for both compressing and decompressing files from within Photoshop. And ImpressIt can optionally create self-decompressing files, so you can distribute compressed files to users who don't have the ImpressIt application. This nifty option adds approximately 25K of decompression overhead to the size of a file.

PicturePress

Storm Technology's PicturePress package includes full-featured compression and decompression software, Picture Decompress, for distributing compressed files, and a Photoshop plug-in module for compressing and decompressing files from within Photoshop. This last feature is important, because although it lacks its own virtual-memory scheme, PicturePress can use Photoshop's implementation to allow processing of large documents.

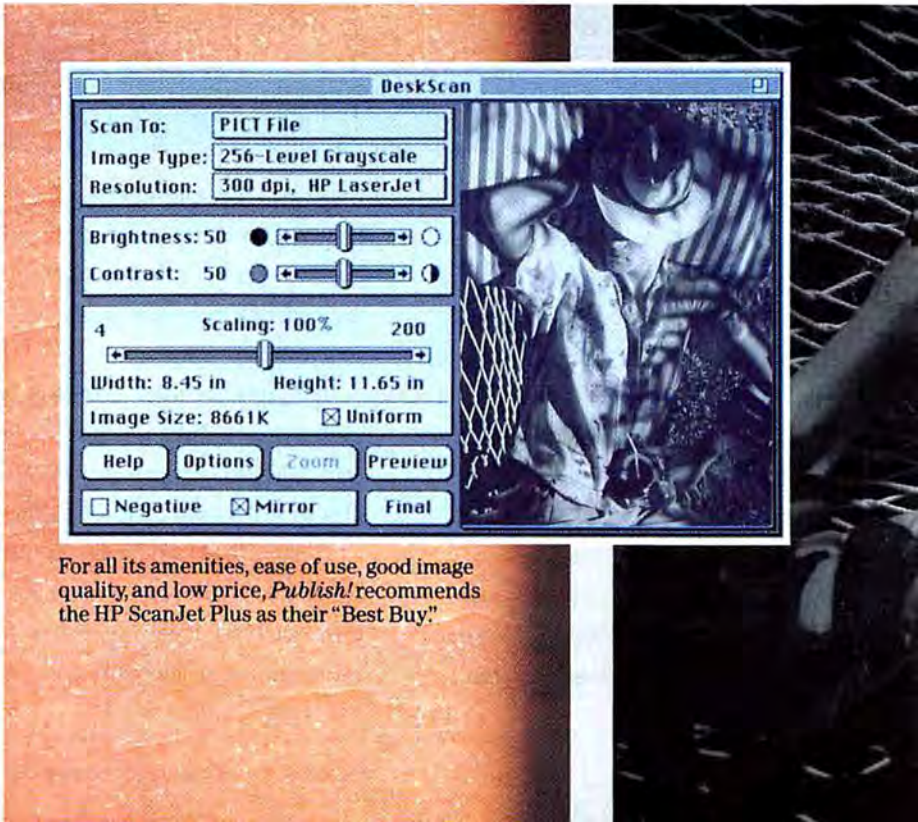
Storm Technology also markets a companion hardware product called the PicturePress Accelerator Card. PicturePress software can optionally access this

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NuBus board, which reduces compression and decompression times to a few seconds or less.

PicturePress processes only PICT file formats, an unfortunate limitation, considering that TIFF is the file format of choice for most users working with color bit-mapped images. Storm Technology is working on a new version, 2.0, that will accept TIFF files as well as images compressed by ImpressIt. It should be available by the time this review appears.

PicturePress offers several special compression options. Its standard JPEG compression has four user-selectable settings that range from ratios of 2:1 to 40:1. A customizable setting can result in ratios up to 200:1.

Especially noteworthy is the PicturePress JPEG++ option, a clever twist that nicely balances high-quality image detail with small file size. You can select one or more rectangular areas of an image and compress them at a much lower ratio than the rest of the image, a scheme that lets you retain as much detail as you need in those areas while not reducing the overall image-compression ratio. A true "lossless" run-length-encoding option provides modest compression ratios that rarely exceed 2:1. For handy browsing, PicturePress also lets you save thumbnails of your images.

The Bottom Line

The JPEG standard was finalized at about the time this review went to press, and the three products evaluated here were released well before that. As a result, you may not be able to open one program's JPEG output with another program until upgrades addressing the new standard become available.

For now, however, ColorSqueeze, ImpressIt, and PicturePress all do an adequate job of reducing the file size of still images. All are easy to use and can compress and decompress most small- to medium-sized images in much less than a minute.

ImpressIt wins hands down in speed. Its interface and preview capabilities are well thought out, and the software produces self-decompressing files and comes with a Photoshop module.

Both ColorSqueeze and ImpressIt handle PICT and TIFF formats and can serve for image-file browsing and PICT/TIFF-conversion utilities. ColorSqueeze does not include a plug-in module for photo-editing programs, however.

The main limitation of the current version of PicturePress is that it can't open TIFF files. However, in addition to being System 7-compatible, Storm Technology's upcoming version 2.0 will eliminate that limitation as well as provide the ability to open ImpressIt files. Version 2.0 will also feature JPEG++ in hardware for greater speed. The current PicturePress package is an excellent value for users who want fine control over the compression process. Its Photoshop module, free decompressor, and JPEG++ feature for selective detail compression ratios, plus the ability to use a hardware accelerator, make it an excellent value.

— Salvatore Parascandolo

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DATA ANALYSIS

Spyglass Transform

The latest version of Spyglass Transform offers more ways to view scientific data than ever before.

For scientific data analysis, a picture is worth a thousand numbers. With Spyglass Transform 2.0 and a Mac, you can transform thousands of data points into a variety of images that help you analyze your data visually.

Whether they are measuring pollution at different sites across a continent, running brain scans, or using sonar to look for archaeological treasures, scientists generate lots of numbers. The first version of Spyglass Transform created pictures of scientific data, using color raster imaging, a process that assigns a color value to each data point in much the same way that image-processing programs assign a number to each color value.

The Plot Thickens

Version 2.0 of Spyglass Transform builds on the program's visualization strengths by adding color surface plots (often called 3-D plots in spreadsheet programs), contour plots, vector plots, overlays of different images, and interpolations of missing data. The new version also adds more data-import functionality and data manipulation as well as improvements to the interface.

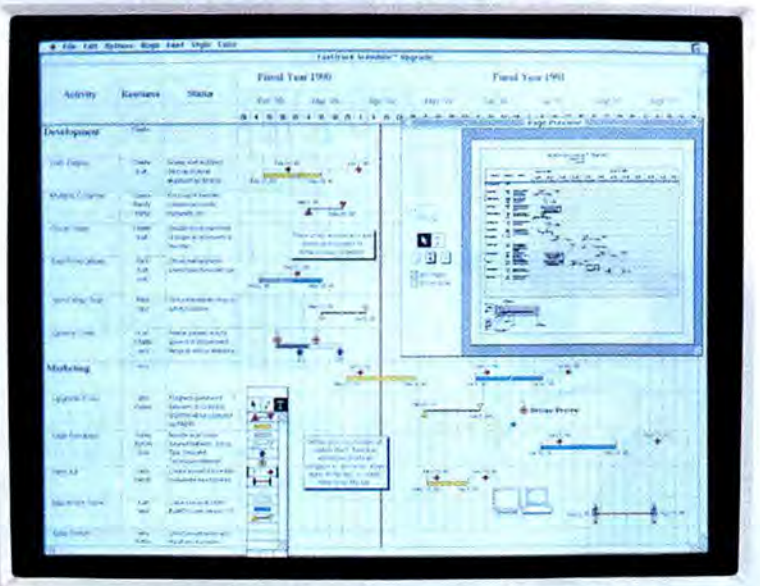
In addition, Spyglass' quartet of data-analysis packages becomes a trio in Spyglass Transform 2.0. View, a separate module for animating raster images, is now a separate product bundled with it. View is useful for watching data evolve over time according to some other variable. Spyglass Dicer, which creates 3-D raster images, and Spyglass Format, a presentation package for images (both of which work with Transform output), round out the Spyglass product lineup.

Paint by Numbers

Spyglass Transform creates its images by using a spreadsheetlike matrix of data points. Numbers occupy the same relative position in the matrix as do their corresponding pixels in the raster image (that is, a value located in the upper left corner of the matrix is represented in the same relative position on an image).

Spyglass Transform can open and save spreadsheets in a standard data format called HDF, but you can also import other formats. Version 1.0 imported only ASCII text, but version 2.0 imports data in a variety of workstation and mainframe generic formats, including byte, integer, and floating-point. You can also import image files in PICT, TIFF, and FITS formats.

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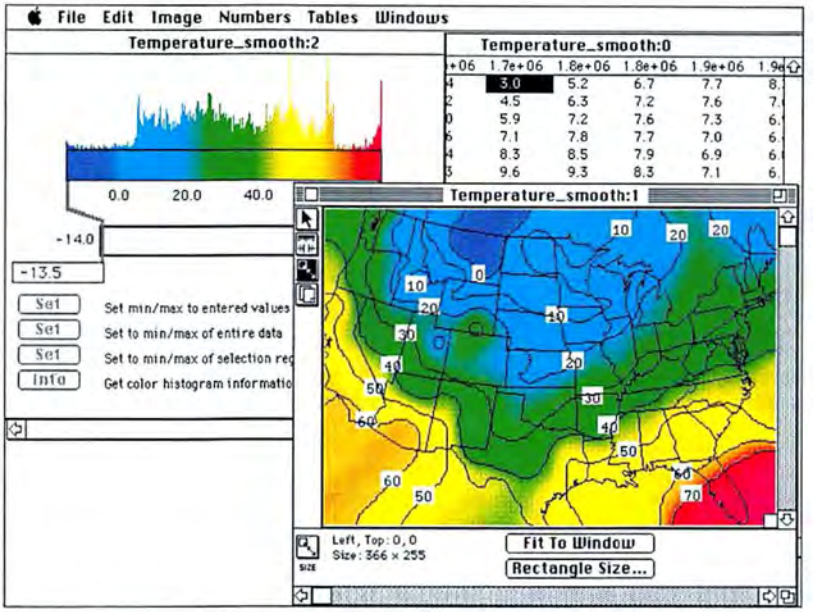


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Transform's most powerful new import format is the ASCII list of triplets, which consists of two columns containing the *x* and *y* coordinates of a measurement plus a third column that contains the measurement itself. Additional columns can contain other parameters such as temperature, pressure, or wind speed. You choose which column of data to visualize while Spyglass Transform rearranges the data into a matrix. This is a significant improvement over version 1.0, which required you to organize your data into matrix format before importing files into Transform.

As you import data, you can define the width and height of the spreadsheet matrix, using the number of data points or the default aspect ratio of the image. If you change your mind, Spyglass Transform does array resampling, which places the data into new arrays of different sizes, using a logarithmic or linear scale or a scale you've created.

Transform can display spreadsheet data to a variety of decimal places as well as



Spyglass Transform 2.0 is a flexible tool for turning numerical data into pictures. Here, an interpolated color raster image, overlaid with a contour plot and a PICT map of the U.S., creates a picture based on 700 temperature-related data points.



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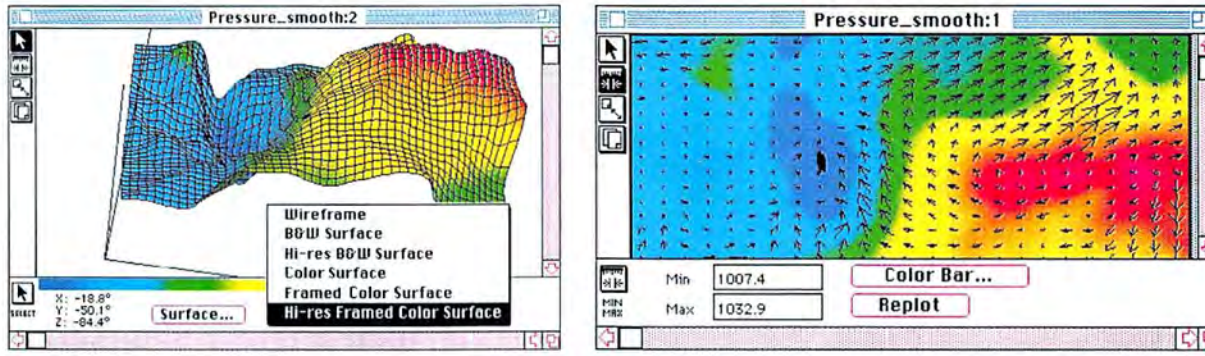
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Spyglass Transform 2.0 uses a variety of new image types for data analysis. The surface plot (left) and the vector plot (right, overlaid with a raster image) both display the same data set recording air pressure around the U.S.

in scientific notation. Unfortunately, the display formats are in FORTRAN 77 terminology, so if you don't know that F5.2 means "floating point, five digits, two decimal places," you're in for a bit of trial and error.

Once your data is set up in the spreadsheet matrix, you can select a raster image from the Image menu. The Windows menu shows you in outline form which images go with which spreadsheet matrices. Images are saved with the corresponding spreadsheet-matrix file.

To select details in an image for charting, you can assign colors to data values. There are 23 color tables to choose from, and more are available from a folder that comes with the program. Transform also lets you easily modify color tables, ranges, and contrasts.

Filling in the Blanks

A powerful new graphics feature in version 2.0 is the Interpolated Image command, which fills in missing data in a raster image. This feature is useful in dealing with data points that are nonuniformly distributed. You can either execute a linear interpolation that keeps a point's original values, in addition to its interpolated values, or execute a smooth



Impressive any way
you look at it.

data interpolation that eliminates spikes in the graph to create an entirely new data set.

In addition to raster images, several new graph types have been added to the package. The Surface Plot graphs the *x*- and *y*-position coordinates in the horizontal plane and your recorded measurements in a third dimension. There are six types of surface plots to choose from, ranging from black-and-white wire frame to high-resolution color surface. To change the viewing angle in 3-D space, simply click on the plot and drag to rotate.

A Vector Plot displays magnitude and direction by plotting a field of arrows of varying lengths pointing in different directions. You create a vector plot by selecting two data arrays that represent the *x* and *y* components of a vector.

A third graph type, the Contour Plot, gives you lines of equal value, such as the temperature lines on a newspaper weather map. The Contour window has tools for sizing and moving images and a tool for adding contour intervals. For creating an image that uses multiple variables, a simple copy-and-paste function lets you overlay any of the plot types as well as PICT or TIFF images.

You can also combine images and data sets mathematically by typing equations into the Notebook window. Notebook calculations use a FORTRAN-like language, but Spyglass has improved Transform's interface somewhat by adding a pull-down menu for selecting functions and variables. There are new functions as well, including Fast Fourier Transforms in one and two dimensions for dealing with data sets that contain imaginary numbers. Trigonometric functions, standard mathematical functions, and functions for matrix manipulation are also included.

The excellent tools in Spyglass View haven't changed since we last reviewed it (October '90, page 72), except that the program is now bundled with Transform. Spyglass View animates multiple raster images directly from memory or from the hard disk. Spyglass plans to integrate View with the Transform program in a future version.

The Bottom Line

Pictures help to ease the chore of analyzing complex scientific data, and Spyglass Transform 2.0 is another example of how well suited the Macintosh is to scientific applications. New image types, expanded import capabilities, enhanced functionality, and the addition of Spyglass View to the package make Spyglass Transform a unique and thoroughly useful tool for visualizing numerical data in any field.

— John Rizzo

Get Info

Spyglass Transform

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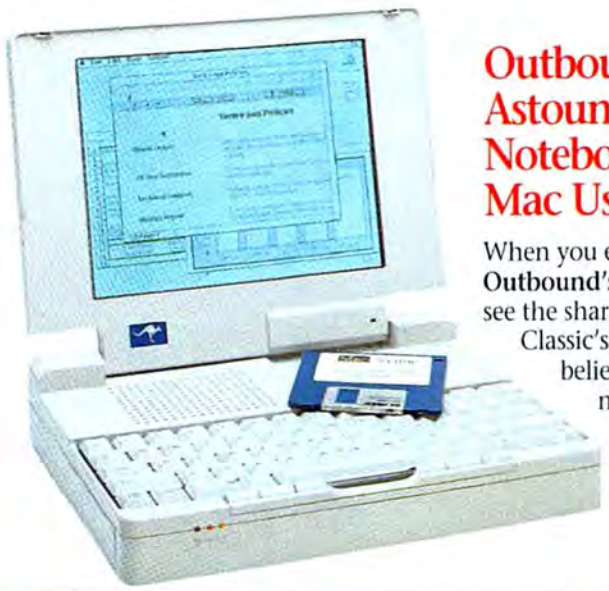


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WealthBuilder v1.0	*28496*	$145
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- Claris MacDraw II v1.1 *29204* $289
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Generic Software
- Generic CADD *29280* $99

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QUICK CLICKS



StuffIt Deluxe 2.0

★★★★½

When it comes to file compression, the new StuffIt Deluxe 2.0 provides nearly every feature available in competing packages without sacrificing an interface that's unmatched in terms of simplicity and ease of use.

Most useful among StuffIt Deluxe 2.0's enhancements are self-extracting archives. As with competitors Diamond and Compactor, double-clicking on "self-unstuffing" files compressed with StuffIt decompresses them automatically, without the need for the StuffIt application. Although this self-extracting feature typically adds about 20K of overhead to an archive, it guarantees that recipients of StuffIt-compressed files will be able to decompress them.

Version 2.0 opens stuffed documents directly in their original applications when you hold down the Option key while double-clicking on a file. This feature mimics an existing DiskDoubler feature. And although StuffIt archives don't normally appear in applications' Open and Save As dialog boxes, the addition of the $79.95 Shortcut 1.5 (another Aladdin product) fills that gap, allowing archives to behave like normal files: Double-clicking on a stuffed file unstuffs and opens it. Furthermore, StuffIt doesn't automatically recompress previously compressed files when you quit an application. However, Shortcut provides a check box in the Save As dialog box that lets you add this function.

Aladdin has added two new compression settings to StuffIt's Options menu: Best Guess and Optimal. The company strongly recommends the new Best Guess setting for most users, and we agree. StuffIt's compression settings represent a variety of trade-offs between speed and file size: The faster the compression, the larger the file size. Best Guess intelligently chooses the best compromise for you from among the program's numerous settings. If speed is your primary concern, you'll find version 2.0's Optimal setting an improvement in speed (and file size) over the program's existing Fast setting.

With version 2.0, you can use two new DAs to stuff and unstuff files without launching the StuffIt Deluxe application. Also included are Stuff and Unstuff functions for HyperCard XCMDs, an XTND that allows MacWrite II or On Location to read and list the contents of archived files, and Stuff and Unstuff extensions for QuicKeys 2.0.

With or without Shortcut, StuffIt Deluxe 2.0 is the king of compression programs. However, at $99.95 (not including the cost of Shortcut), it's also the most expensive. If you're interested only in basic compression and archiving, your best choice is probably a shareware program such as StuffIt Classic or Compactor. For only $25, each of these programs provides equivalent compression and archiving performance without the additional functionality and convenience of StuffIt Deluxe 2.0.

Aladdin Systems, Inc., Deer Park Center, Suite 23A-171, Aptos, CA 95003; (408) 685-9175. Version 2.0. $99.95.

— Darryl Lewis



Shortcut 1.5

★★★★★

If you're looking for a time saver that adds a ton of new features to your Open and Save As dialog boxes, Shortcut 1.5 is it. The new Shortcut adds several enhancements that make it one of the most versatile and useful utilities for managing files and folders.

Shortcut's menu pops up when you click on the disk name that appears in any standard Open and Save As dialog boxes. From there, you can execute a staggering variety of useful functions quickly and easily without leaving the dialog box to access additional software. For example, you can create a new folder (forget the QuickFolder INIT); find lost files or folders (you don't need DiskTop or FindSwell); get information on files, folders, and volumes (Shortcut works even better than the Finder's Get Info command); unstuff archives (forget UnStuffIt); and erase files and disks. And if you install frequently used folders and files on Shortcut's Go To Folder or Open File submenus, you can open them with a single mouse click. In addition, version 1.5 lets you add your most recently used folders and files to those submenus so that you can return to them quickly (exit Super Boomerang).

Shortcut 1.5 also displays StuffIt archives in most applications' Open and Save As dialog boxes. As with folders, when you double-click on archives, they open to reveal all the enclosed folders and stuffed documents that are compatible with the current application. Double-clicking on a stuffed document first unstuffs it and then opens it.

Version 1.5's View command lets you open read-only copies of text and PICT files, copy any portion of a file, and paste it into another document. In addition, teamed with StuffIt Deluxe, Shortcut 1.5 adds the ability to stuff files from the Shortcut menu. It also provides you with a check box at the bottom of your standard Save As dialog boxes that gives you the option of stuffing files immediately after you save them.

From a control panel, you can change the listing order of the files and folders that are available in Shortcut's Go To Folder and Open File submenus. You can also specify the number of recent files and folders to be tracked, assign keyboard command equivalents to each menu item, and set other options.

Before Shortcut, all the additional software we required to accomplish these functions was not only inconvenient but was also the cause of a never-ending string of INIT conflicts. We much prefer Shortcut's elegant combination of function and ease of use. And although System 7 makes some of Shortcut's functions, such as finding files, less essential, the program adds an extraordinary level of convenience to Finder-related tasks.

Aladdin Systems, Inc., Deer Park Center, Suite 23A-171, Aptos, CA 95003; (408) 685-9175. Version 1.5. $79.95.

— Darryl Lewis

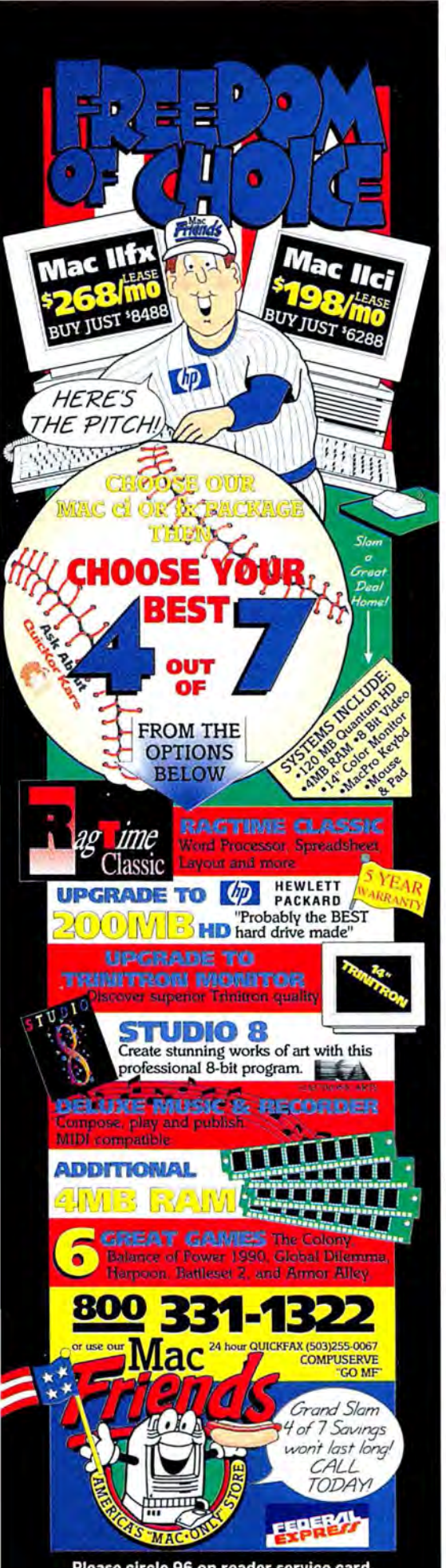


MacPro Plus Keyboard

★★★★½

Some people care passionately about the fit of their jeans, others about the feel of their computer keyboard. If you long for a keyboard that's quiet and "smooshy" to the touch, Key Tronic's MacPro Plus may be for you.

You can customize the MacPro Plus to suit your keyboard fancy in a variety of ways. First and foremost is touch. You can modify the tension of individual keys by using little rubber domes: You pull off the key caps and attach the domes to the stem of the switches on the keyboard itself. The rubber domes come in three weights — the heavier the weight of the dome, the harder it is to depress the key. So if you keep pressing your Caps Lock key



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NEW ON THE MENU

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accidentally, for example, you can make it harder to depress, thereby eliminating the annoyance.

For those used to IBM-style keyboards, the MacPro Plus lets you switch the positions of the Caps Lock and Control keys. You can also use a Period/Comma lock to eliminate the greater-than (>) and less-than (<) symbols when you're typing successive uppercase letters with periods and commas. The extra-large L-shaped Return key is also a nice touch.

Another plus is the keyboard's compatibility with the full range of Mac models — ADB and non-ADB Macs alike. And if you use paper templates designed for the Apple keyboard, you'll have no problem fitting them onto the MacPro Plus' 105-key layout (it includes 15 user-definable function keys).

For the keyboard's $179 purchase price, you also get a free copy of Affinity Microsystems' Tempo II macro utility software, a $149.95 retail value.

One aspect of the keyboard we didn't like is the positioning of the two ADB cable connections. They're located on the back side of the keyboard, facing the CPU. This makes it impossible to move the rear of the keyboard flush against a flat surface.

But overall, if you're fanatical about the sound and feel of a keyboard, the MacPro Plus will suit your style.

Key Tronic Corp., P.O. Box 14687, Spokane, WA 99214; (509) 928-8000. $179.

— Paul Freedman

OverView

If you don't have the time or money to invest in full-featured presentation software, take a look at OverView. With OverView, you can build presentations quickly and easily, using text and images created in other programs. The results aren't as slick as a Persuasion or PowerPoint presentation, but you'll get from idea to output much faster, because you create the entire contents of the presentation from within the familiar confines of your favorite word-processing or graphics program.

OverView's main task is to assemble the files you import from other programs into a single presentation file and then let you play the presentation from within OverView. When you import files you've prepared in a word-processing or graphics program into OverView, each file becomes a screen, or "slide," in the presentation.

Arranging the slides' order is a snap: You use either OverView's outline list of the slides or actual thumbnail representations. The program also makes it easy to select and rearrange chunks of your presentation and to make global and specific changes to slide details such as text and borders (OverView provides a variety of borders to choose from). You'll want to create most of your text in your word processor, though, because the program provides only a limited text editor.

One word of caution: OverView is great for creating on-screen presentations, but the program's support for slide makers is extremely limited, as are the transitional effects the package provides. If your presentation demands professional-looking color slides, you're better off with a high-end package. And if you want special effects such as fancy color gradients, you'll have to depend on a graphics program.

OverView lets you convert your on-screen presentations into stand-alone applications for distribution purposes.

Although OverView's interface is a bit busy and it takes a while to decipher a few cryptic icons, you can probably master OverView in just a few hours. Its excellent tutorial helps.

A large-scale monitor is a boon, because the more slide thumbnails you can see at once, the easier it is to organize your presentations.

The OverView package provides both application and full-featured DA versions of the product.

If you're addressing the board of directors, OverView won't be your best tool. But if you need to gather your coworkers around a Mac to show them business plans and you don't have much time to get a presentation together, OverView will not let you down.

Loop Software, P.O. Box 1249, Menlo Park, CA 94026; (415) 326-4803. Version 2.1. $159.95.

— Steven Bobker

Music Writer

Musicians engaged in the tedious task of transferring notes to pages share a common fantasy: playing music into a magical keyboard that then spews forth perfectly printed musical notation. In an attempt to make this dream come true, Pygraphics has introduced Music Writer.

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at Macworld /Boston-Booth #5566

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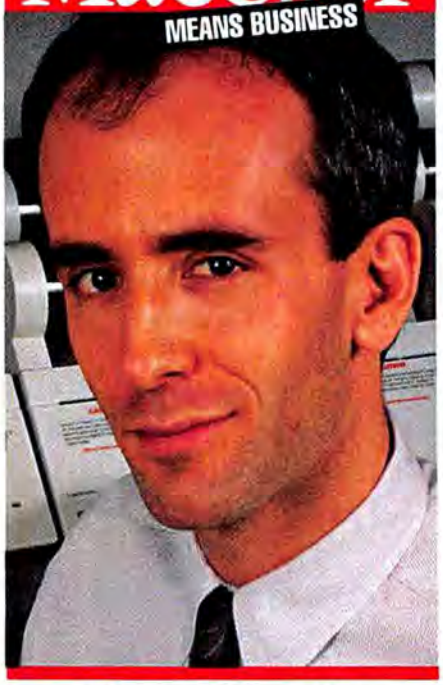
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MacUser
MEANS BUSINESS



Andrew Newmark, Chairman, CoStar

"CoStar's goal has been to eliminate unnecessary problems around the office. Our LabelWriter and AddressWriter are obviously business products, and the Mac's acceptance by business is enormous. Which is why we're doing so well.

"At first we advertised in both Macworld and MacUser. We found that we got the best leads out of MacUser. So we decided to stick with the publication that gives us the most sales. We can't afford to waste any money.

MacUser plays the lead for CoStar.

"Converting MacUser leads to sales has been great. The MacUser audience is buying a lot of our products. I think the right people are contacting us through MacUser—the repeat customers.

"You can read all the research you want, but success is measured in the sales you get. That's why we advertise in MacUser."

ANOTHER MACUSER SUCCESS STORY

NEW ON THE MENU

QUICK CLICKS

Music Writer is available in three versions: The first and least expensive package provides up to 3 musical staves; a second package provides 6 staves; and a third, 40 staves. The differences in price and staves aside, all three packages share the same features: input via mouse or MIDI; the ability to import standard MIDI files (Format 1) from sequencer programs; PostScript printing, using Adobe's Sonata font (the printer font is not included); nonstandard note heads; chord symbols; percussion notation; and part extraction. Unfortunately, they also share the same unreliability.

To facilitate the magical transfer from MIDI to notation, Music Writer includes the MiniSequencer, a MIDI recorder that takes MIDI-controller input and turns it into notes on your screen. You set the quantize value (which rounds off each note you play to the closest predetermined value — for example, an eighth note) and the tempo, listen for the metronome, click the mouse, and start playing. When you've finished, click to stop, let the Mac chew on it for a bit, and voilà — sheet music.

To polish your score, you can enter notes, rests, accidentals, lyrics, chords, articulations, rehearsal marks, text, titles, and more by choosing these items from a series of tool palettes. Once you've entered them, you can select individual elements and move them to enhance their legibility.

As the saying goes, every silver lining has a cloud, and in the case of Music Writer, we found it to be more of a thunderhead. Importing a few large standard MIDI files caused a system crash. Restarting and playing some notes into the MiniSequencer had the same effect.

In addition to being so capricious, Music Writer fails in other obvious ways. The program failed to recognize accidentals when we used the MIDImouse feature to place individual notes in the score via MIDI. Grace notes appear identical to regular notes, save for their tiny heads, and the Undo command is whimsical at best — it's available for some operations but not for others.

With its current deficiencies, the usefulness of Music Writer may depend largely upon the state of your pocketbook. If your needs are simple and you can stand the frustration, $119 for the 3-stave version is tempting. Even more tempting, however, is Coda Music Software's Music Prose 2.1, a reliable $399 package with 32 staves and a similar feature set. Music Prose makes Music Writer's 6- and 40-stave versions look decidedly unappealing.

Pygraphics, P.O. Box 639, Grapevine, TX 76051; (800) 222-7536. Version 1.1. Level 1, $119; Level 2, $295; Level 3, $595.

— Christopher Breen



MyAdvancedLabelMaker

1½



MyAdvancedMailList

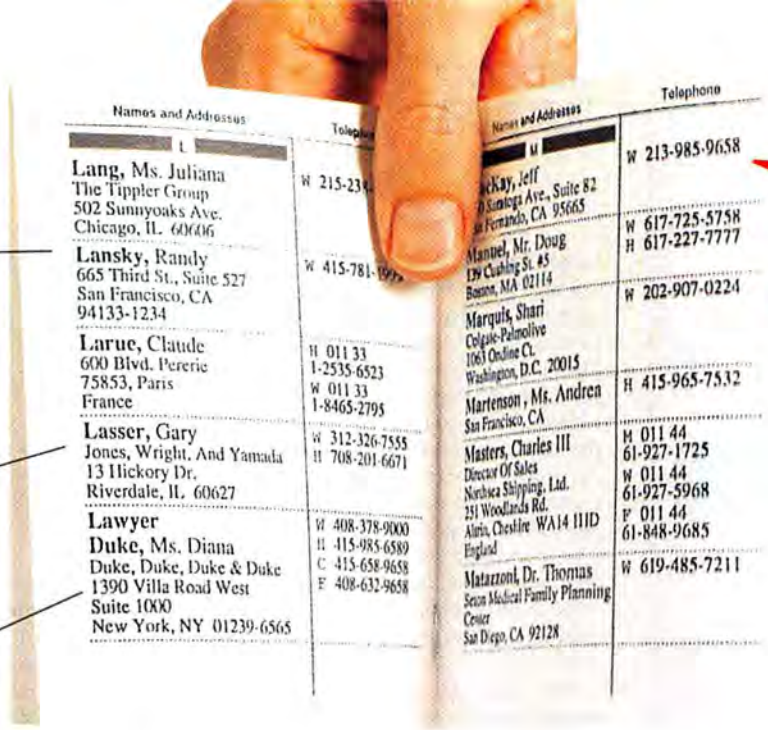
1½

MyAdvancedLabelMaker claims to be a free-form utility that lets you put "what you want where you want it" on a label. MyAdvancedMailList is billed as a powerful mailing-label manager and personal-data organizer. According to the products' packaging, both require less than five minutes to learn and are extremely easy to use. That may be so — but only if you're willing to unlearn most basic assumptions about how Mac software should function.

The feature sets of both products sound comprehensive and powerful, but it's an exasperating experience to learn to use these programs, because of poor design and inconsistency with Mac operating conventions. According to MySoftware Company, which makes both products, the company has its own interface philosophy that it has attempted to incorporate into Apple's way of doing things. If this approach were an improvement, we'd be the first to laud a break from Apple standards, but MySoftware's divergences trip you up instead of letting you climb to higher ground.

One fundamental paradigm of the Apple Human Interface Guidelines is that you select an object and then select the action to be performed on that object. Both LabelMaker and MailList violate this convention at every turn. For example, in LabelMaker, the standard Cut, Copy, and Paste commands are unnecessarily complicated by submenus, which require you to specify whether to perform the commands on art, text, or format.

And in MailList, it's difficult to select a single record, because the nonresizable window displays pairs of records. This approach can become confusing, because you must specify whether actions should apply to the upper or lower record in the pair. Some people may find that the dual-record display offers greater flexibility,



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QUICK CLICKS

but we found it awkward.

LabelMaker has a clumsy, nonvisual approach to many tasks. For example, instead of reordering information by dragging text fields across the WYSIWYG label, you tell the program in a dialog box to move Line 1 to Line 3 and so on for all the lines. For selecting labels for printing, the program doesn't display a sheet with the appropriate number of labels down and across. It presents a dialog box in which you type the specific starting row and column numbers. Furthermore, the Print command appears in its own separate menu, not on the File menu as convention dictates.

When you add a graphic to a label, the entire menu bar is replaced with a new modal Drawing menu. Unfortunately, the tools are limited and Cut and Paste don't work properly under MultiFinder. To use the Clipboard, you must work in one application at a time.

Because it's in its second rendition, MailList is a better product than LabelMaker, but there are still disappointments. MailList supplies 16 fields and 4 categories, but none can be repositioned or individually formatted. For bulk mailing, you can sort with 3 fields and the program automatically generates sack reports. It can't print Postnet bar codes on envelopes, however. MailList has 25 predefined output forms for labels, envelopes, cards, and personal organizers, and you can customize specifications for unsupported stock. However, you can't save more than one custom template for each type of stock.

When all is said and done, if you prefer programs that operate in the conventional Mac fashion (and who doesn't?), there are better alternatives to MyAdvancedLabelMaker and MyAdvancedMailList (see "Mac to Mailbox," April '91, page 174). Most notable among them are StickyBusiness for labels and MacEnvelope for mailing.

In light of the problems we encountered with MySoftware's products, we're happy to report that updates to both packages are scheduled for this summer. We sincerely hope that the new products will address the shortcomings of the current versions.

MySoftware Company, 1259 El Camino Real, Suite 167, Menlo Park, CA 94025; (415) 325-9372. MyAdvancedLabelMaker, version 1.0, $49.95. MyAdvancedMailList, version 2.0.2, $49.95.

— Owen W. Linzmayer



Last Resort

★★★★½

Working Software's Last Resort is just that. It's a small INIT that can recover lost files when all else has failed, because it transparently captures all your keystrokes (that's right, *all*) and stores them in text files within your System Folder.

Last Resort, which runs well under Systems 6 and 7, is managed by a control panel. You determine intervals between file saves by setting the number of keystrokes (from 1 to 512) to be recorded before the program executes a save. You can also control intervals with user-specified periods of inactivity (from 1 to 60 seconds). In our tests, the program never revealed that it was going about its file-saving business, an impressive feat that makes for truly transparent operation.

Passwords that do not appear on-screen are nonetheless visible in Last Resort's work files. Fortunately, a Pause button prevents the program from saving keystrokes when passwords or other confidential information are entered. The Delete button provides a handy list of all Last Resort files and lets you delete any or all of them.

The program works flawlessly, but the interval controls aren't as well designed as they could be. For example, you can't just type in numeric values; you must use small scroll arrows, which make the settings hard to fine-tune. And an important option that's missing altogether is an automatic delete after a user-defined period. As is, a new text file is created upon every startup and you tend to forget to delete old files, which can quickly become a storage problem.

There's also a drawback when it comes to using the files that Last Resort creates. Everything you type is captured in the order in which you typed it. Consequently, when you edit a document, keystrokes are recorded out of context. Also, backspaces, original errors, and other artifacts of less than perfect keyboarding are all there and must be dealt with manually. Still, it's better to have a messy file than no file at all.

Last Resort has an excellent manual and comes in the most ecologically sensible packaging we've seen yet.

Working Software, Inc., P.O. Box 1844, Santa Cruz, CA 95061; (408) 423-5696. Version 1.0. $49.95.

— Steven Bobker

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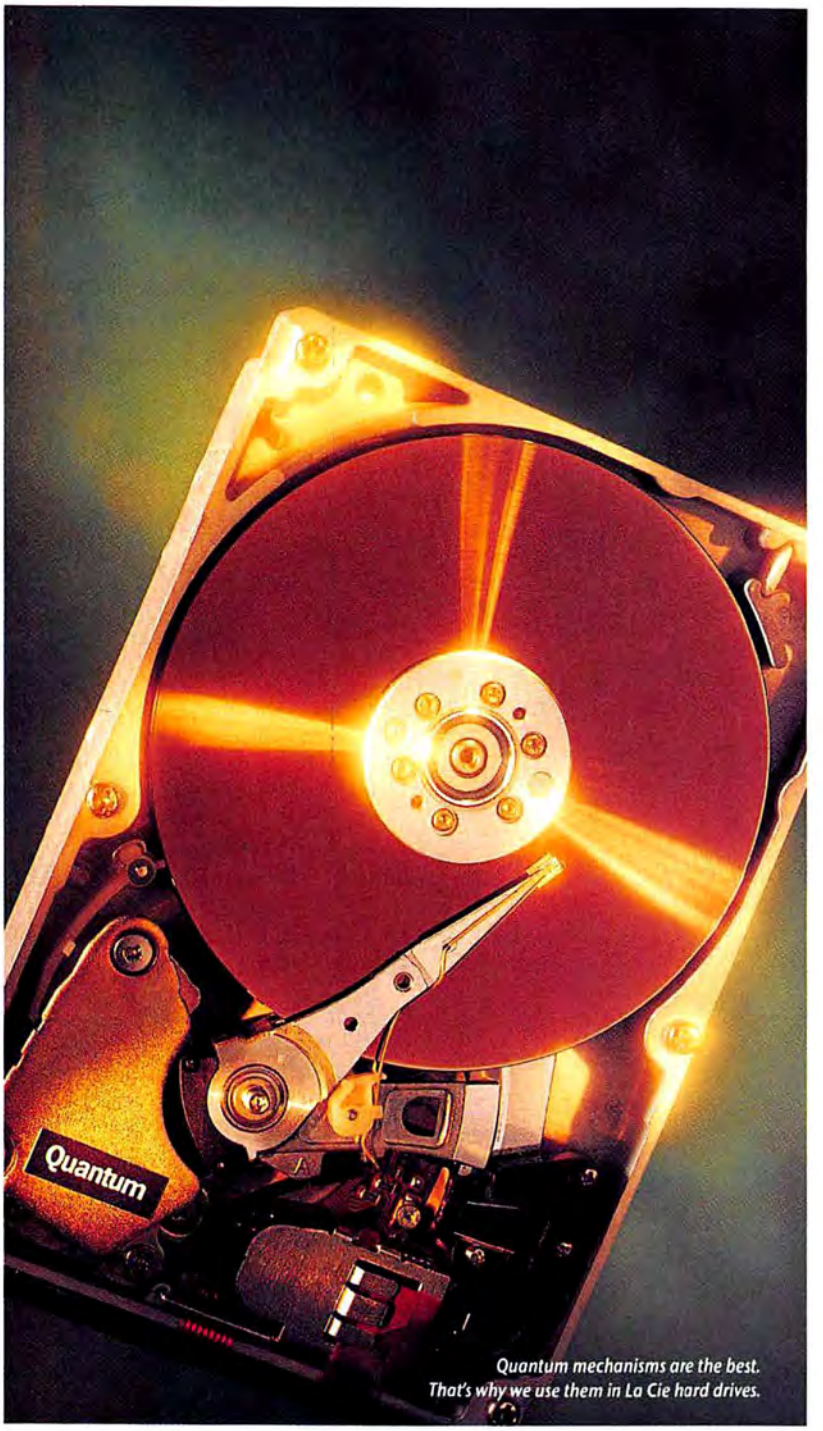
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"...the cream of the crop."—Macworld

"Of all the drives tested we recommend La Cie's drive."—MacUser

"This is an excellent drive and Silverlining is great!"—D. Jordan
Burbank, CA



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Your Money and Your Mac

If you can balance your checkbook, electronic personal accounting may be the logical next step.

Anyone who's ever purchased a Mac for home use knows that it's easier to justify the acquisition as a checkbook balancer than as an entertainment center — even if the latter is what you *really* bought it for. But although the household-accounting rationale used to be little more than a ruse so you could play Dark Castle or Crystal Quest, there's now an excellent field of contenders not only for balancing your checkbook but also for helping you plan for your children's college education.

BY TOM WRONA

Checkbook programs are the simplest home-finance programs. These inexpensive, modestly endowed packages duplicate and automate your checkbook and check register. Checkwriter II and Quicken are the most popular checkbook programs. Another program, MacMoney, looks and feels like a checkbook program, but it's more sophisticated. CheckFree, an electronic-payment service that walks and talks a lot like a checkbook program, goes even further — it pays your bills with electronic checks.

Beyond the checkbook program is the financial-management program — a check register with financial-planning features. In this category, Andrew Tobias' Managing Your Money is in a class by itself. MacMoney nudges into the financial-management category, but it's much less sophisticated than Managing Your Money. (On the other hand, it's also almost half the price.) [*Dollars & Sense, another well-known financial-management package, was excluded from this story at the request of its publisher, Software Toolworks, because it was in the process of making some major repairs to the program. — Ed.*]

The next level of personal-finance programs — financial-planning software — is populated by exactly one program: WealthBuilder. There's a distinct difference between Managing Your Money and WealthBuilder. WealthBuilder doesn't contain a check register, so you can't use it to manage your day-to-day financial affairs. It's strictly for planning your major expenditures, such as buying a house, financing your children's college education, or structuring your retirement income. So if you use WealthBuilder as a financial planner, you'll still have to use one of the other personal-finance programs to manage your checkbook.

Electronic Checkbooks

All the checkbook programs can print checks on your printer and record the checks you write by hand. The programs also have simple budgeting capabilities and the ability to automate recurring transactions. Because checkbook programs are low-priced and easy to use, they're an excellent choice if you want to start automating your financial record keeping or if you just don't want to get involved with anything too complex.

Although the programs have their own strengths and weaknesses, they all share a common set of core features. When you want to write a check, you're presented with a reasonably accurate on-screen depiction of a blank check. Once you've written a check, you can print it out right away or write others and then print them as a batch. Every program comes with offers for LaserWriter- or ImageWriter-compatible checks from check printers such as Deluxe and NEBS (or, in the case of Quicken, from Quicken's publisher, Intuit). Each program offers a variety of compatible checks to choose from (one-part, two-part, all-purpose, payroll, voucher), and prices run in the 7-to-11-cent-per-check range when you buy quantities of a thousand. (You can buy smaller quantities at a slightly higher price.) You don't have to print all of your checks if you don't want to, however; all the programs can account for handwritten checks too.

All the programs include both a personal (or home) chart of accounts and a business chart of accounts. An account in this sense isn't necessarily a bank account but is instead a category used for classifying where your money comes from and where it goes. The four classic categories are income (what you're paid), expenses (what you pay), assets (what you own), and liabilities (what you owe). Your monthly income minus your monthly expenses is your cash flow. Your assets minus your liabilities is your net worth.

Each of the four categories is further subdivided. You have an account for each type of transaction you regularly perform. This enables you to track where your money goes. All the checkbook programs let you budget for each account, and each program can generate a report, for example, of budgeted versus actual expenses (or income, as the case may be). So if you budget $100 a month for your Entertaining account and blow $150 on nachos and cocktail weenies in March, your Budgeted Versus Actual report will show that you're 50 percent over budget on this account for March.

The Electronic-Finance Suitability Quiz

If you're thinking about making the transition to electronic personal accounting, do yourself a favor and take this brief quiz (right) first. Just answer yes or no to the questions, and then read on.

If you answered yes to at least three of these questions, you could benefit from handling your money on your Mac. This is especially true if you answered the first three questions positively. If you answered yes to fewer than three of these questions, you're probably not organized enough to get much out of the change and, in fact, your going electronic could leave you hopelessly lost and confused. When it comes to keeping your financial world in order, diligence is the key.

The most important part of the job is backing up regularly. You should back up your financial data after every work session, even if all you do is drag the relevant files onto a floppy. It's tedious, yes, but imagine how much more tedious — and harrowing — it would be to figure out your financial condition from scratch.

The second-most-important point to remember is to keep up with data entry. It's all too easy to tell yourself you'll record that ATM withdrawal tomorrow or the next day. Before you know it, your electronic records are way behind real life and you're hopelessly out of sync.

It's also a good idea to keep paper as well as computer records during your initial trial period. That way you can easily recover if there's a major foul-up or if you decide to stick to paper records.

Going electronic isn't for everyone, but if you're already reasonably good about keeping your books in order, you should have no trouble making the transition.

		Yes	No
1.	**Do you balance your checkbook every month?**	❑	❑
2.	**Do you back up your data regularly?**	❑	❑
3.	**Do you plan your financial future?**	❑	❑
4.	**Do you make a lot of installment payments every month?**	❑	❑
5.	**Do you keep your financial records and checkbooks where unauthorized people have access to them?**	❑	❑

Like the other checkbook programs, MacMoney goes after the small-business market by including a sample business chart of accounts, but MacMoney's publisher, Survivor Software, sells a $99.95 companion program called Invoicit, which adds invoicing capability. This may make MacMoney particularly appealing to moonlighters and others with home-office businesses.

Checkwriter II, Quicken, and MacMoney differ in the sophistication of their accounting. Quicken and Checkwriter II have only income and expense categories, so you can't use them to figure out your net worth, for example. (Quicken's manual describes a workaround for tracking assets and liabilities, but if doing so is important to you, you'll probably want to move up to MacMoney or Managing Your Money.) MacMoney, on the other hand, does have asset and liability accounts and a Personal Balance Sheet report.

The three programs differ in the sophistication of their output too. At a list price of $119.95, MacMoney costs twice as much as Quicken or Checkwriter II, but it gives you more for your money. Depending on how you look at it, MacMoney is either a high-end checkbook program or a low-end financial-management program.

Output is one consideration that sets MacMoney apart from the other checkbook programs. A report that lists where your money is going is useful, but there's nothing like a chart to vividly show you your expenditures in one category compared with the other ways you spend your money. MacMoney is the only checkbook program that can produce multicolor graphs. The program has four built in: Net Worth, Budgeted Versus Actual, Major Expenses, and Cash Flow. If these aren't enough for you, you can create custom bar, line, and pie charts with a few mouse clicks and keystrokes. Want to see what your tax bite looks like? Create a custom pie chart comparing your total income with the taxes you pay.

MacMoney's financial-management features are handy but quite modest. There's an unsophisticated retirement planner, a loan calculator, and a future-value calculator (so, for instance, you can figure out how much to save monthly to have x dollars, inflation-adjusted, in y years).

MacMoney has staked out the middle ground. If you want a more sophisticated checkbook program or if you want a simple financial planner with growth possibilities, MacMoney may be just the program you're looking for.

Quicken lies at the low end of the spectrum. It's cheap and easy to use, and it makes a virtue of its simplicity. Its one nod to sophistication is its payment-grouping ability. It lets you group recurring payments that fall on the same day, so you can not only quickly pay your rent at the click of a mouse but also pay all other bills that come due at the same time.

It's hard to find fault with Quicken. Its documentation is comprehensive, friendly, and well written. Getting technical support requires a toll call, but help is free and unlimited. One minor nit to pick: Because Quicken can deal with only one account at a time, transferring money between, say, a checking account and a savings account is awkward.

Common Property

All the checkbook programs can provide numerous reports, including cash-flow, income-versus-expense, and budgeted-versus-actual-expenditures reports, and a check register. In general, you can customize reports by limiting the output to certain periods of time or accounts, which is useful for isolating and highlighting specific expenditures.

In making reports, MacMoney's capabilities are again the most sophisticated of the lot. The program gives you seven report categories from which to choose: Income and Expense, Personal Balance Sheet, This Month's Activity, Bill Payment Summary, Category List, Name List, and ID Code List. As with MacMoney's graphs, you can also create your own reports.

Beyond the core features, each program has its own set of bells and whistles. For instance, only Checkwriter II offers an integrated WYSIWYG check-design program complete with simple object-oriented drawing capabilities. It's also the only checkbook program that comes with a matching DA, so you can write a check while you're using another application.

Appropriately enough, Checkwriter II's most powerful feature is its check-writing capability. It can maintain a database of more than 32,000 payees and not only write checks to them but also address labels and envelopes. And because you can customize your checks, you can even use your existing checkbook for printing checks. You can actually tear them out of your checkbook and run them through your laser printer or ImageWriter (but not, unfortunately, a DeskWriter).

Checkwriter II is also the only checkbook program with two levels of password protection. They let you prohibit first-level users from voiding or deleting transactions, which is handy if you use Checkwriter II for business and want to have an employee run it. Checkwriter II also comes with an INIT that automatically reminds you, whenever

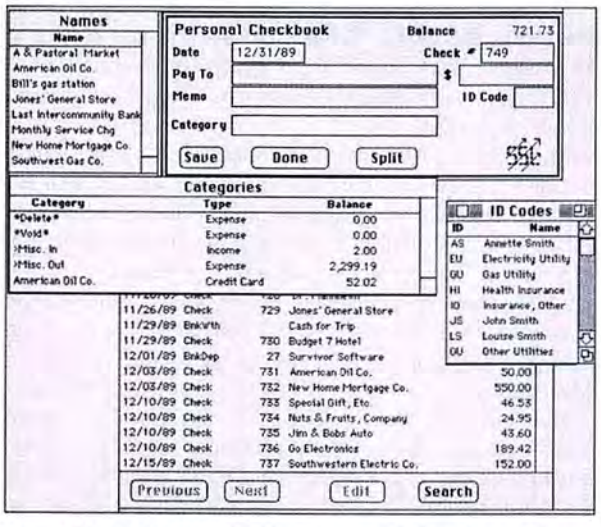


Figure 1: MacMoney is a checkbook program that can be used in a small business. It lets you keep several windows open at one time, so you can see your bookkeeping structure at a glance.

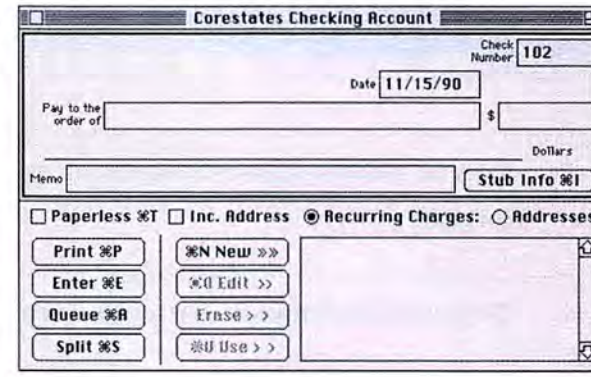


Figure 2: Checkwriter II comes as a DA and an application, and it includes an object-oriented check-design module. You can split a transaction among several categories, using the Split button, so, for example, you can account for your mortgage principal separately from your mortgage interest.

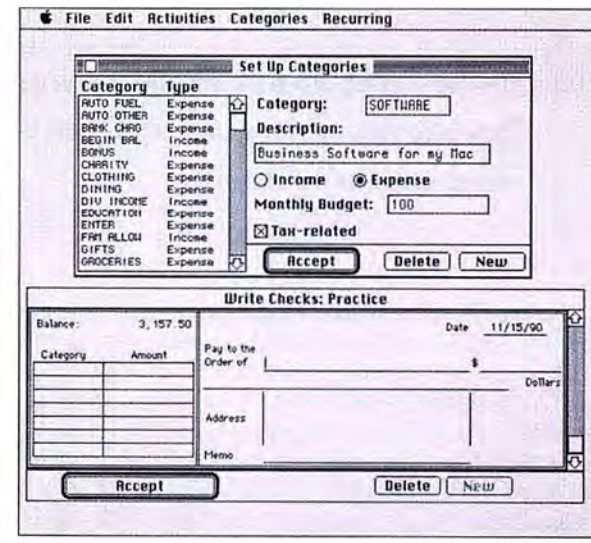


Figure 3: Quicken is still the champ among pure checkbook programs. Setting up categories is easy, because there are only two types: Income and Expense. You can split a transaction by using the stub to the left of the check.

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you turn on your machine, of payments and deposits that are due.

Quicken, in keeping with its "small is beautiful" motif, limits its fancy features to a couple of clever time savers. If the program's check number is wrong (because, say, you've written or voided a handwritten check), just press the plus or minus key to change the number on-screen. Typing the first few characters of a category's name or clicking on it in the category list plugs the category into a split transaction that itemizes the payment — for example, mortgage principal and interest.

CheckFree: Electronic Bill Paying

CheckFree is a simple checkbook program — with a twist. Instead of printing the checks you write, it pays them electronically! First offered in 1988 as a stand-alone DOS program, CheckFree is also integrated into the DOS versions of Quicken and Managing Your Money. It made its debut on the Mac last fall.

Checkfree Corp., creator of CheckFree, figured out how to bring electronic funds transfer (EFT), increasingly common in the corporate world, to you and me. Checkfree pays your bills in three ways. Companies that have agreements with Checkfree, such as American Express and MasterCard, get their dough electronically. Other companies get laser-printed checks or laser-printed drafts. When Checkfree pays by check, it lumps several of its customers' payments into one check and sends along an itemized list of whose payments the check includes. A draft, on the other hand, is an individual check similar to one you would write yourself. The actual payment method for any given payment is picked by Checkfree, based on technical requirements and agreements with merchants. Whatever the method, the payment shows up on your monthly bank statement like any other. If the payment is made by draft, you receive the canceled draft too.

The CheckFree program itself is simple and not very impressive. It's a classic electronic check register with a little budgeting capability thrown in. It can make recurring payments for you, and you can record paper checks in addition to Checkfree payments.

The manual has the distinction of being one of the worst I've ever seen. It is ugly; poorly organized; and filled with hostile, gratuitous legalese about how few rights you have if you get into an argument with Checkfree. It is the only Mac-software manual I have ever seen that doesn't have a single screen shot.

Still, I found the program useful and worthwhile. Whether or not it's a good deal for you depends on how much you value your time (it really should save you some) and how useful automation is to you. At $9 a month for up to 20 payments ($3 per additional 10 payments), it costs you a 16¢ premium over the price of a stamp for each payment. If, however, you frequently pay $15 or $20 in late-payment charges, CheckFree can pay for itself every month.



Figure 4: CheckFree is an on-line bill-paying service. You specify the payment on this electronic check and then upload the authorization to Checkfree, which issues the payment.



Figure 5: Managing Your Money is the best all-around personal-finance package. The latest version (4.0) has a completely redesigned interface. Clicking on one of the icons at the left of the main screen (rear) brings up a submenu, or navigator. This MYM version also supports color.

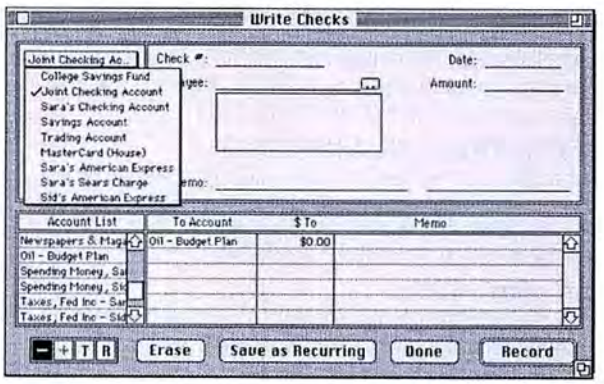


Figure 6: Managing Your Money is a total financial package intended to track your complete monetary situation. You can use a pop-up pick list of payees when you write a check.

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"One very nice thing about the pressure-sensitive pen is you're able to create your own brushes. So that as you press down, you get more color or wider color or more transparent color or a combination of all three, depending on the software.

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A coming attraction promises to be interesting. Sometime this year, Checkfree is planning to bring electronic check-paying capabilities to anyone with a Touch-Tone phone. Making payments will mean punching in numbers during a toll-free call. You'll be able to add payees by mail or by making a voice call. Because the company anticipates that people without computers will make fewer payments, those people will likely pay a lower monthly price for a correspondingly lower number of payments.

Managing Your Money

Of all the personal-finance programs I had to choose from in doing this article, Managing Your Money was the one I chose to manage my own money.

Managing Your Money is by far the most comprehensive personal-finance package available for the Mac. It offers all the basic money-management tools, such as check writing, recurring transactions, and budgeting, as well as a wealth of financial-planning capabilities.

At the click of a button, you can display your net worth at any of five levels of detail. This can be a sobering — even alarming — experience. With a few more clicks and keystrokes, you can analyze your stock portfolio, determine if you should refinance your mortgage, forecast your cash flow for the next year — and even figure out your life expectancy!

Although the program has long been highly praised, I've always thought it was overrated. Despite a fair amount of power, earlier versions suffered from some glaring deficiencies, such as incompatibility with MultiFinder, "context sensitive" reports that were difficult to use, and a generally weak implementation of the Mac user interface.

But version 4.0 of Managing Your Money is a different story. The user interface has been completely revamped, and it's greatly improved over previous versions. The program now resembles the accounting program M.Y.O.B., which is not surprising, because Teleware, the developer of M.Y.O.B., developed MYM for Meca Ventures.

In addition to the improved full-color user interface, MYM now boasts a payee pick list, more-powerful reporting, and faster and more-powerful recurring transactions.

CheckFree capability, a feature that MYM's DOS version has had for years, is being added to version 4.0 and should be available by the time you read this. MYM's publisher says that the CheckFree option will be available as a free upgrade.

WealthBuilder

If Managing Your Money is the Cadillac of personal-finance programs, WealthBuilder, at first glance, looks like the Mercedes. It's bigger, prettier, and a little more expensive. Also, it's a little less practical for the average person. That's because WealthBuilder, as noted earlier, doesn't manage your money on a day-to-day basis. Instead, you give the program a snapshot of your finances by entering data

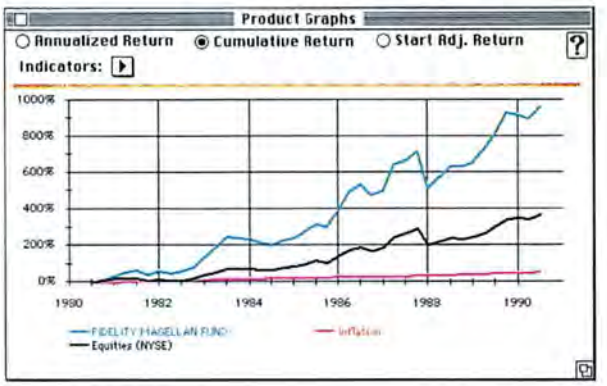


Figure 7: WealthBuilder is a pure financial planner that includes information on more than 1,400 stocks, bonds, and mutual funds. Using WealthBuilder, you can chart an investment's performance against several common indexes (in this case, the New York Stock Exchange and inflation).

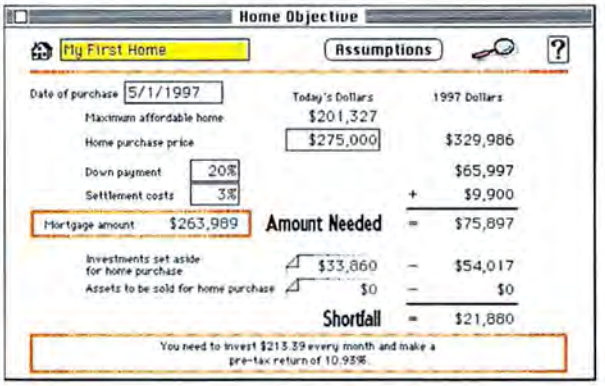


Figure 8: WealthBuilder's Home Objective screen tells you how much you need to save to make a down payment. The Assumptions button lets you set factors such as the mortgage and home-appreciation rates. The magnifying glass produces an animation that tells you if you can afford the home and what your payments will be.

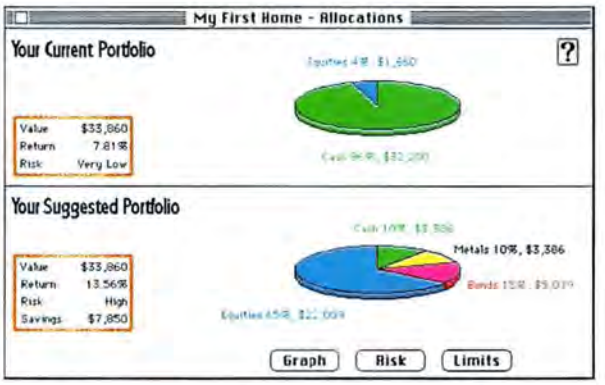


Figure 9: WealthBuilder's Allocations graphs chart your current status and the program's recommendations. The Risk button lets you set your level of financial daring, and the Limits button lets you exclude certain types of investments. Unfortunately, WealthBuilder restricts you to only four types of investments.

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Table 1: Features of Personal-Finance Programs

			
	CheckFree 1.5	**Checkwriter II 3.1**	**MacMoney 3.5**
	★★★½	★★★★	★★★★
List price	$29.95	$59	$119.95
Pros	Good for users with lots of installment payments or frequent late charges. Easy-to-use service can automatically pay your bills via electronic fund transfer.	Good for home users with business aspirations. Two levels of password protection. Custom reports and mail features. Links with Aatrix's Payroll Plus program. Includes DA version and reminder INIT.	Excellent for home-based businesses. Integrated with Survivor's Invoicit invoicing program.
Cons	No canceled checks for some transactions. Terrible manual. Only simple budgeting.	Limited financial planning.	No password protection.
Company	Checkfree Corp. 720 Greencrest Dr. Westerville, OH 43081 (800) 882-5280 (614) 898-6000	Aatrix Software, Inc. 405 Bruce Ave. Grand Forks, ND 58201 (800) 426-0854 (701) 746-7202	Survivor Software Ltd. 11222 La Cienega Blvd. Ste. 450 Inglewood, CA 90304 (213) 410-9527

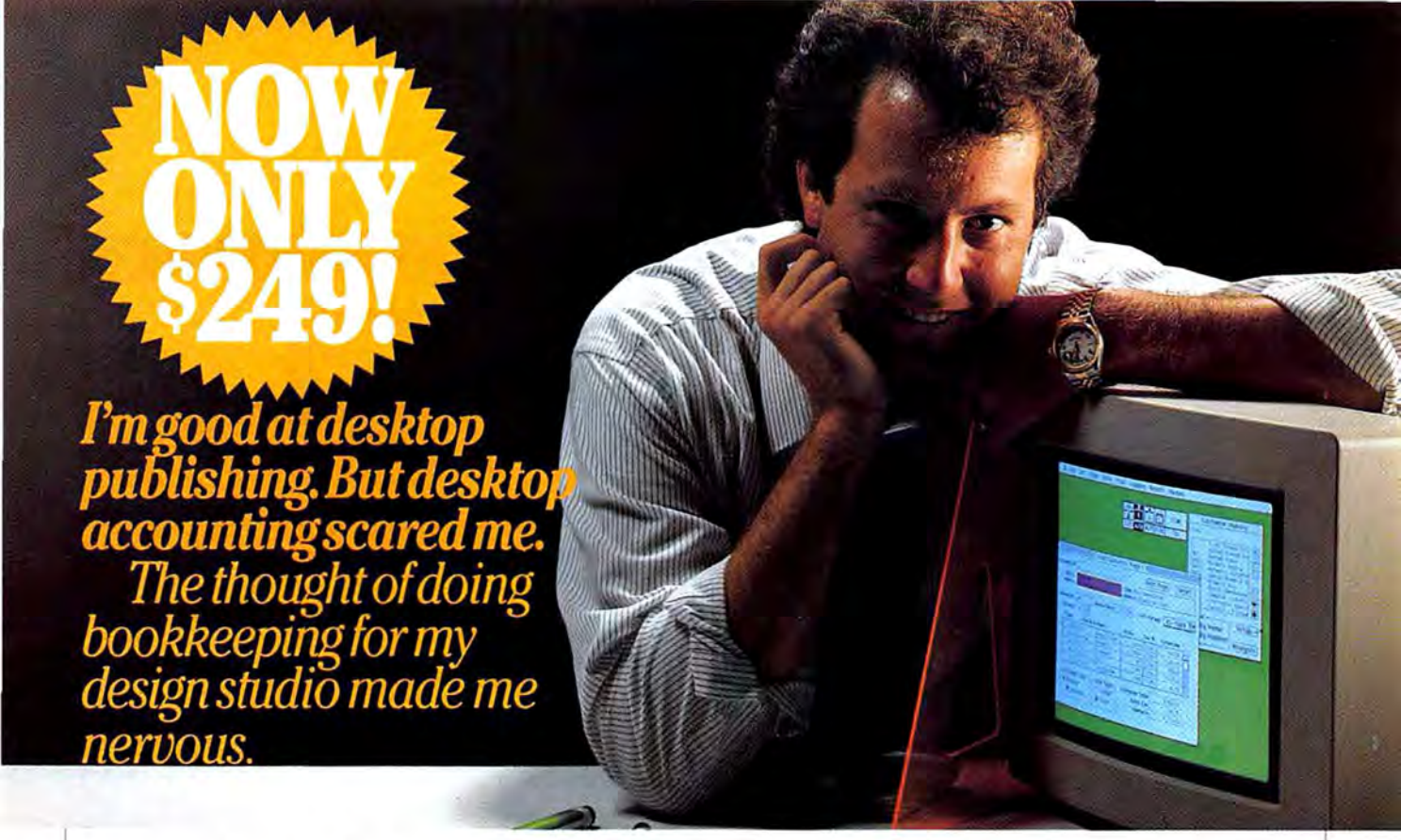
directly or by importing it from Managing Your Money, Quicken, or MacMoney.

Once you've entered your data into WealthBuilder, the fun begins. It's a video game for the *Wall Street Week* set. Set a financial objective — such as buying your first home or financing your kids' education or your retirement — and WealthBuilder generates a comprehensive investment strategy complete with beautiful multicolored graphs illustrating the program's recommended asset allocation. You can then browse though the program's database of more than 1,400 (or 10,000, if you purchase additional entries from Reality) stocks, bonds, and mutual funds to find the ones that best suit you. The database, which you can update quarterly for a subscription fee, even includes phone numbers for the mutual funds.

Unfortunately, the financial advice the program gives is sometimes downright wacky. I told the program I was a conservative investor (2 on a scale of 1 to 5) and that I wanted to buy a house in one year. I filled out a spreadsheet that calculated how much I had to save each month to make the down payment. Even though I was going to need the money in just 12 months, the program suggested I invest 14 percent of my savings in equities (stocks) and 8 percent of my savings in precious metals!

As a former stockbroker, I can tell you to run, not walk, from anyone who tells you to invest money you're going to need within a year in the stock market, let alone in gold-mining stocks. Volatility and transaction costs will eat you alive. The program does permit you to specify maximum percentages for investments in any of the investment types (or completely exclude them), and you can fine-tune the risk/reward ratio until you're comfortable with it, but I don't think that's enough. The program should know that you don't put short-term money into equities. Ever. In its defense, WealthBuilder is intended for long-term rather than short-term investing and it recommends mutual funds instead of individual stocks and bonds, which are far more volatile than funds. However, the program should still be smart enough to adjust to users' requirements.

This is not to say that WealthBuilder is not a useful and powerful program. It can be very useful indeed. Just make sure that you understand all the implications of your decisions and don't follow the program's recommendations blindly. As always, you should consult a professional



I'm good at desktop publishing. But desktop accounting scared me.

The thought of doing bookkeeping for my design studio made me nervous.

When I heard "balance sheet," I broke into a sweat. I know type, advertising, printing. Now I was forced to do our books.

No choice.

We were on our third part-time bookkeeper in eleven months, and she was called away suddenly. Sound familiar?

But I'm the boss and the buck stops with me. We had bills to pay, payroll checks to write, invoices to send, taxes to set aside.

New System 7 features!

And deadbeats to collect from–only I had no idea who owed us how much or for how long. Some suppliers may have even thought of *us* as deadbeats. I needed to know our cash flow, and get a handle on all this. But I didn't have a lot of time.

Step one: find an accounting program that feels as familiar as our Macs, that starts out easy, but has lots of reserve firepower for later on.

I found atOnce! The manual looked orderly. I dug in...

The familiar with the unfamiliar

atOnce! starts you off with a tutorial that uses HyperCard, one of my old favorites. I was at home.

Numbers are my nemesis, but the tutorial was actually fun and got me comfortable. It takes you step by step through the program, and gives you some easy-to-swallow accounting basics so you're not reading a foreign language. There's context-sensitive help, just in case.

And while you learn, you can start to set up your books. So it doesn't come in a flash and you sweat a little. But you do it and you learn.

I started off light. Double-clicked on one of the default charts of accounts and my General Ledger was practically set up for me. Then entered a few client names in Accounts Receivable, to get an idea of what was coming in. Prepared six invoices–and atOnce! calculated sales tax. Nice. Printed the invoices which I redesigned in atOnce!–realign a field here, change a font there. The usual.

Then ran a Customer Aging Report to identify the slow-payers (I had no idea such a terrific thing was even possible).

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Table 1: Features of Personal-Finance Programs, continued

			
	Managing Your Money 4.0	**Quicken 1.5**	**WealthBuilder 1.0**
	$ $ $ $ $	$ $ $ $ ½	$ $ $ $
List price	$219.98	$59.95	$249.95
Pros	Ideal for sophisticated investors. Comprehensive and well designed. Can handle investment transactions and advanced planning.	Excellent for beginners in computerized personal accounting. Inexpensive and very easy to use.	Good tool for knowledgeable investors. Easy-to-use financial planner. Comprehensive securities database.
Cons	May be overkill for people with simple money-management requirements. No password protection.	Can't open more than one account at a time. No graphs. No password protection.	Recommendations may be inappropriate for unsophisticated investors. No day-to-day money-management functions. No password protection.
Company	Meca Ventures, Inc. 327 Riverside Ave. Westport, CT 06880 (203) 226-2400	Intuit P.O. Box 3014 Menlo Park, CA 94026 (800) 624-8742 (415) 322-0573	Reality Technologies 3624 Market St. Philadelphia, PA 19104 (800) 346-2024 (215) 387-6055

financial advisor before making any decisions about your money, but WealthBuilder can help you do your homework, which will make you a more informed investor. And for novice investors, WealthBuilder's extensive help system can take some of the mystery out of making money and get you started asking the right questions.

The Bottom Line

If you're looking for the best all-around personal-finance program, buy Managing Your Money. Version 4.0 is a breakthrough improvement.

If you want something simpler, any of the checkbook programs will do. Quicken's manual is the best of the lot, and Quicken has the most attractive user interface. If you need security, though, you'll want to go with Checkwriter II. MacMoney is also respectable. It is more expensive, but you do get some simple financial-planning capabilities and, by adding its companion Invoicit program, you can expand it into a small-business package complete with accounts-payable capabilities. Your decision may come down to which set of features you like the best.

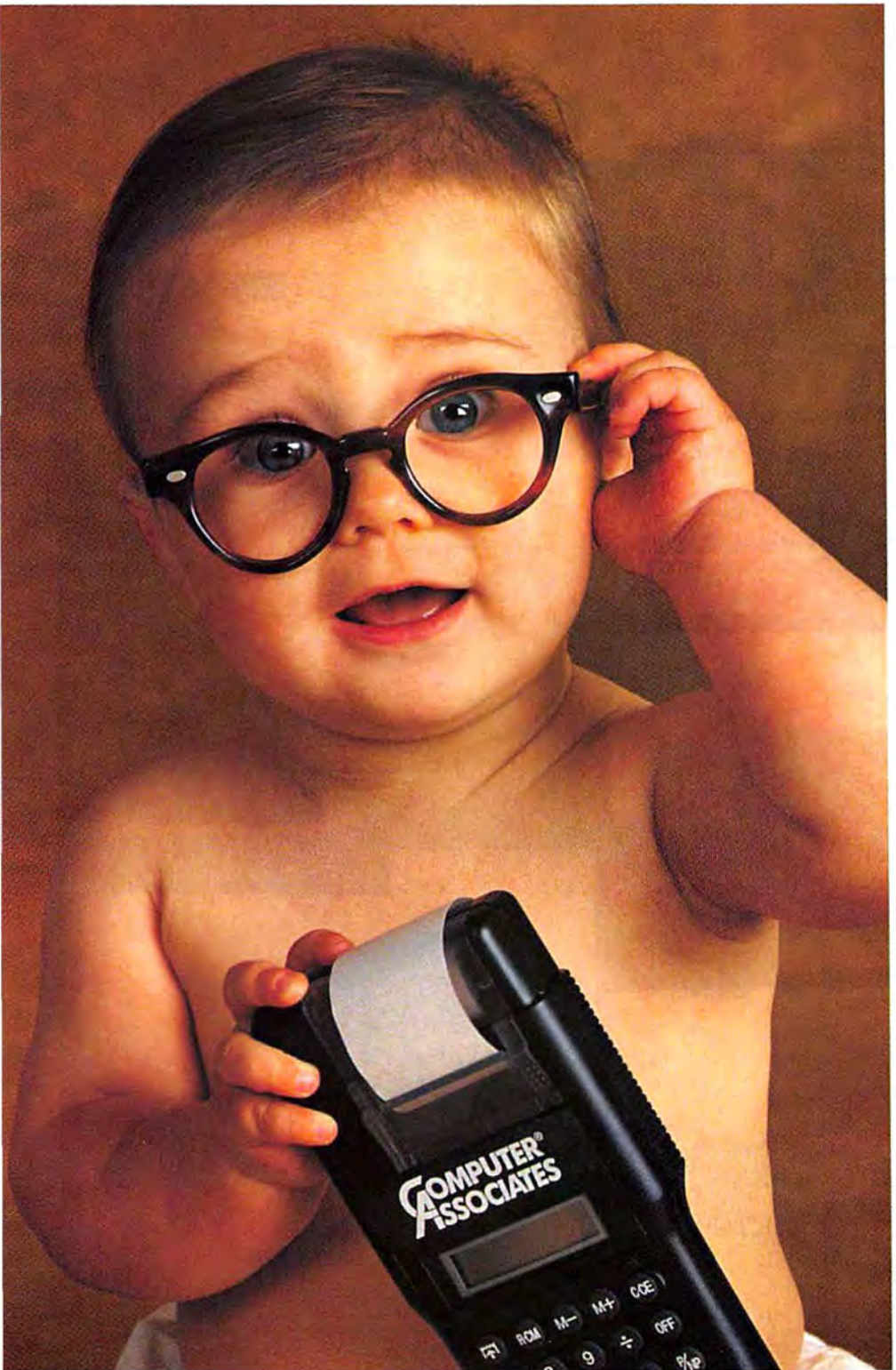
If your needs are more sophisticated (and you yourself are more financially sophisticated), you will appreciate WealthBuilder's powerful planning features — but take its recommendations with a grain of salt. Combining WealthBuilder and one of the checkbook programs gives you roughly the same capabilities you'd have with Managing Your Money alone.

If you balance your checkbook religiously each month, you're a good candidate for a personal-finance program. But if you infrequently or never balance your checkbook, if you occasionally bounce checks because you don't know exactly what's in your account, or if your wallet or purse is littered with ATM slips, handling your money electronically may not be the financial panacea you thought it would be. If you're somewhere between these two extremes, going electronic is worth a try.

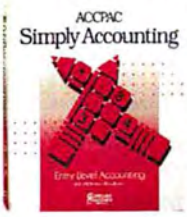
[As we went to press, we got our first look at Intuit's latest revision of Quicken. Version 3.0 is a major upgrade that significantly increases the program's power and features. We'll have a full review in an upcoming issue. — Ed.]

Tom Wrona is a New York-based technical writer and consultant who writes frequently on technology and finance.

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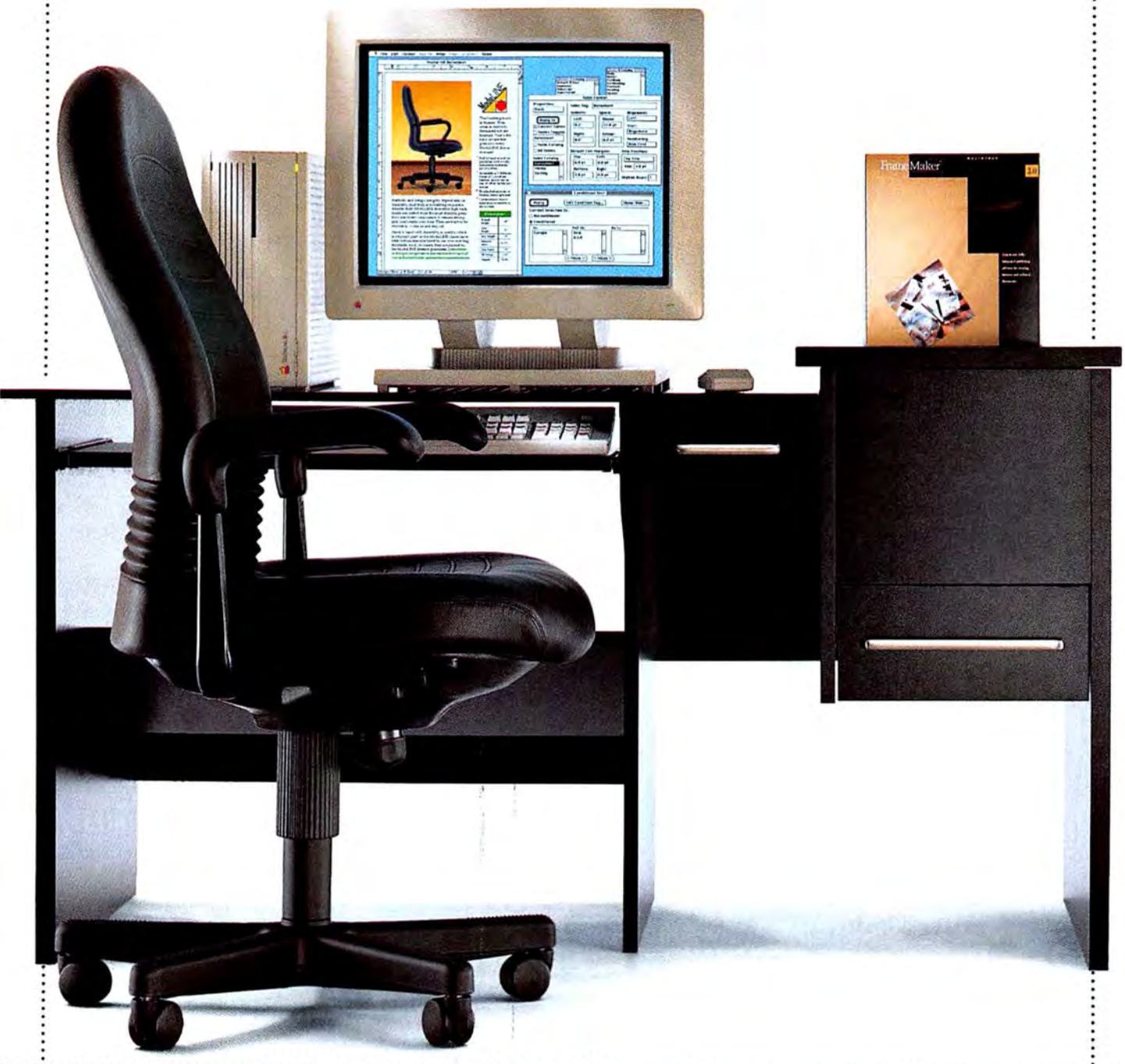
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SENSIBLE GRAMMAR
THE CO
OXFO
DICTIO
A Tale of Two Cities
By Charles Dickens
It was the best of times, it was the worst of times, it was the age of wisdom, it
was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was
the season of light, it was the season of Darkness, it was the spring of hope, it was the
winter of despair, we had everything before us, we had nothing before us, we were
all going direct to Heaven, we were all going direct the other way — in
short, the period was so far like the present period, that some of its
noisiest authorities insisted on its being received, for good or for evil, in the superlative
degree of comparison only.
There were a king with a large jaw and a queen with a plain face, on the throne of
England; there were a king with a large jaw and a queen with a fair face, on the throne of
France. In both countries it was clearer than crystal to the lords of the State preserves of
loaves and fishes, that things in general were settled for ever at that delightful period.
It was the year of Our Lord one thousand seven hundred and seventy-five. Spiritual
revelations were conceded to England at that favoured period, as at this.
Mrs. Southcott had recently attained her five-and-twentieth blessed birthday, of whom a
prophetic private in the Life Guards had heralded the sublime appearance by announcing that arrangements were
made for the swallowing up of London and Westminster. Even the Cock-lane ghost had
been laid only a round dozen of years, after rapping out its messages, as the spirits of this
very year last past (supernaturally deficient in originality) rapped out theirs. Mere
messages in the earthly order of events had lately come to the English Crown and People,
from a congress of British subjects in America: which, strange to relate, have proved more
important to the human race than any communications yet received through any of the
chickens of the Cock-lane brood.
France, less favoured on the whole as to matters spiritual than her sister of the
shield and trident, rolled with exceeding smoothness down hill, making paper money and
throu
thres
of his ammuni
the Lord Mayor of
highwayman, who
London gaols fought battl
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Proper English

Writing well doesn't necessarily require a personal copy editor. A grammar checker may be all you need to produce perfect prose.

BY TED LANDAU

Writing isn't what it used to be. Using a word processor, you can swiftly edit your work with just a few clicks. Using a spelling checker, you can eliminate your misspellings. Using a grammar checker, you can eradicate grammatical mistakes and ensure that your writing maintains a smooth, consistent style. Almost. Grammar checkers can't really do all that. None of the current grammar-checking programs can turn dross into gold. Bad writing is bad writing. Still, these programs can help make your writing better.

Right now, five products are competing for a share of the Mac grammar-checking market: Correct Grammar, Grammatik Mac, RightWriter, Sensible Grammar, and MacProof. Although each has distinctive characteristics, they all share some basic similarities.

PHOTOGRAPHY: WALT DENSON

All employ a set of algorithms for analyzing sentence structure and identifying possible errors. For example, they can detect a lack of agreement between a subject and a verb (*they is*) or a split infinitive (*to hastily decide*). They can also spot many contextual spelling errors that most spelling checkers miss — such as homophone errors (*there* instead of *their*) and compound-word errors (*every one* instead of *everyone*). They even check for improper phrase usage, such as wordy phrases (*later* instead of *at some later point*) or inappropriate use of the passive voice (*Jill wrote the book* instead of *The book was written by Jill*).

The majority of these programs incorporate an "ordinary" spelling checker, eliminating the need to use two types of checkers to proofread a document. Also, they let you adjust the checking procedures to match the overall style appropriate for intended readers. When they've finished checking a document, all the programs offer analyses that list statistics such as word count and an assessment of the text's level of difficulty.

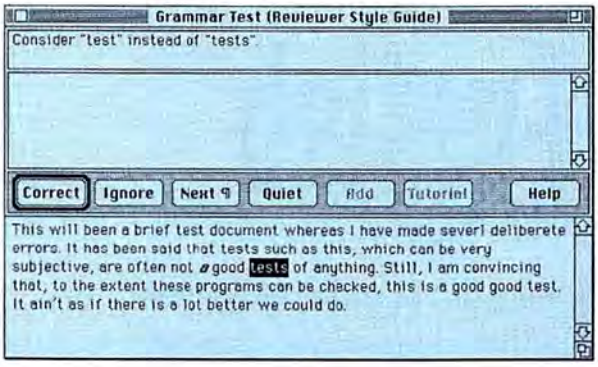


Figure 1: Correct Grammar was the best performer in our tests. When the program flags an error, it highlights it within the document text. Clicking on the Correct button makes the suggested correction; otherwise you can edit the text directly. Selecting Quiet prevents flagging of future violations of a specific rule.

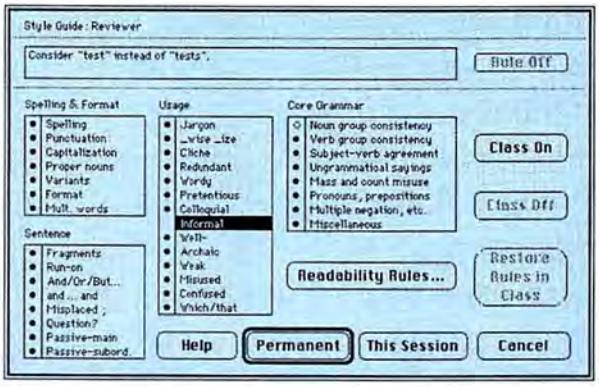


Figure 2: You can turn Correct Grammar's classes of rules on and off in this window. Classes that are off (for example, Informal) are indicated by the absence of a bullet. Classes that have individual rules turned off are indicated by a diamond (for example, Noun group consistency).

Mistake Proof?

To assess their accuracy, we tested all the grammar checkers with a variety of documents of differing lengths. The most critical test for comparison purposes was a brief document containing 27 errors. Each program checked this document with all of its rules turned on.

None of the programs achieved perfection. Some errors, such as repeated words (*good good*), seemed easy for all five programs to spot, whereas other errors were detected by only one or two of the programs. They all frequently flagged correctly used words or phrases as possible errors. In particular, most programs seemed overeager to point out instances of the passive voice. Because Sensible Grammar and RightWriter can't check spelling, they couldn't spot the three simple spelling errors (for example, *severl*). Whichever program you use, your own knowledge of grammar and style will still be critical.

The four programs that provide difficulty-level indexes were in general agreement. Three programs indicated that only a fifth-grade reading level was required to understand the document, whereas Sensible Grammar claimed that a seventh-grade level was necessary.

Correct Grammar. Correct Grammar detected 20 errors, the most of any of the programs. It was the only program to flag *a good tests* as an error and one of only two that spotted *This will been.*

Grammatik Mac. Grammatik Mac flagged 12 errors, including most of the more serious ones. It failed to detect a split infinitive (*to*

But these programs cannot work miracles. They don't always suggest a correction. Sometimes they do. Other times the best they can manage is to describe the nature of the error and the general means of correcting it; you then have to decide on your own what the specific correction should be. Sometimes these programs flag a correct or deliberate usage as a possible error (for example, you may really *want* to use the passive voice). It's up to you to decide whether a correction is actually necessary. None of these programs successfully detects all errors — they often miss even apparently obvious ones. There also seems to be little consistency across the programs in terms of which types of errors they detect and which they don't.

All the programs provide an option for turning off selected rules. This is essential to prevent repeated flagging of a type of "error" you do not wish to change. Most of the programs include separate style settings that, when you select them, automatically turn on and off the rules that are appropriate for a given style, such as technical, fiction, or business. The only drawback of turning off a selected rule is that the program will then skip those few instances when you might want that error indicated.

All the programs can check documents created in MacWrite, MacWrite II, and Word, and all but MacProof can also check WordPerfect and WriteNow documents. Text formatting is retained in all corrected files. All the programs can also check ASCII text files. Be sure to read how your program saves corrected documents, though; you

quickly run) even though the rule for split infinitives was turned on. Instead, it suggested that *to* perhaps should have been *two* or *too* — hardly helpful suggestions.

RightWriter. RightWriter did fairly well, spotting 12 errors even though it didn't check spelling. It did miss a few obvious errors, such as the extra space between the last word and the period of a sentence (. . . *long* .). It was the only one to suggest that *As if they should.* might be an incomplete sentence.

Sensible Grammar. Sensible Grammar flagged 10 errors. It flagged a few errors that most of the other programs missed (*This will been,* for example), but it missed some that the others caught (for example, *this programs* and the incorrect use of the word *whom*). It made no attempt to distinguish correct from incorrect use of homophones, flagging every instance of *to, do, there,* and the like. Still, most of the other programs did not detect homophone errors at all.

MacProof. MacProof identified only 9 errors, 3 of which were the 3 spelling errors. It missed errors of agreement between subject and verb and the incorrect use of *whom.* It flagged virtually every occurrence of *be* verbs, even ones that were clearly correct and that the other programs ignored. Considering the small size of its rule set, however, it isn't surprising that MacProof's performance was the poorest of the lot.



might discover that you have unintentionally replaced your original with the corrected copy. This can be especially critical if something corrupts your altered file.

When your system is running under MultiFinder, you should have at least 2 megabytes of RAM to use these programs effectively with your word processor. Although they can all run on any Mac, they can be frustratingly slow on 68000-based machines such as the SE and the Classic.

Correct Grammar

Correct Grammar is a model of interactive grammar checking. The program scans a document and pauses at each suspected error, highlighting the relevant word(s) within the several visible lines of text. Additionally, it displays an explanation of the error together with a suggested correction. If you click on the Correct button when Correct Grammar suggests a specific replacement, it makes the replacement (see Figure 1). You can also edit your text directly. If you decide not to make a suggested change, you click on the Ignore button and proceed to the next possible error. Clicking on the Quiet button turns off the rule pertaining to the current error; you can choose whether to do this permanently or just for the rest of the session.

Correct Grammar includes 11 preset styles (the most of any of the programs reviewed here), ranging from Informal to Technical. Selecting one determines which rule classes are turned on or off. Most users won't be completely satisfied with any of the preset styles. Using the Style Guide, you can turn any individual rule class on or off (see Figure 2), but each class represents a collection of many rules. You cannot list rules within a class, and you can turn rules on and off only when you see the program use them during a document check. Correct Grammar also provides no means for you to edit rules or add new ones.

Ease of use is especially important in evaluating these programs, because a grammar checker is simply an adjunct to your word processor — you shouldn't need to take a course to learn how to use it properly. Still, you don't want to sacrifice the ability to detect and correct errors for the sake of convenience, so a balance must be struck. Correct Grammar does an excellent job of striking this balance. Its functions are easy to access and easy to understand. The combination of the Correct, Ignore, and Quiet buttons smoothly carries you through the entire document-checking process. Its checking features are relatively easy to customize, and in our tests, it detected the most errors of any of the programs (see the "Mistake Proof?" sidebar).

Grammatik Mac

Grammatik Mac offers you a choice of methods for checking a document. As an interactive checker, it functions similarly to Correct Grammar. Once again, you either click on a button to make a suggested replacement or, after reading some general advice, edit the text directly (see Figure 3). Separate buttons let you instruct Grammatik Mac to ignore either a specific phrase (for example, *can be checked*) or the general rule (for example, passive voice) for the rest of a session. Six writing-style templates are available, and you can turn individual rule sets on and off. Overall, Grammatik Mac compares favorably with

Correct Grammar in terms of ease of use.

Additionally, Grammatik Mac offers the option of creating a "marked" version of a document. With this method, it creates a separate copy of the document in which each suspected error is enclosed by brackets, together with a brief description of the type of error. You can review the marked copy and make changes, using the word processor that created the original document. When you've finished making changes, you can reopen the marked copy in Grammatik Mac, which then automatically removes all the error markings and leaves you with a corrected final copy.

Grammatik Mac 2.0's rule-modification abilities are the most complete of any of the grammar checkers. The program comes with a separate application, called Rule Editor, that lets you modify any existing rule and create entirely new rules (see Figure 4). For example, if you often make a particular error that isn't included in Grammatik Mac's set of rules, you can add a new rule that detects it. Except in the simplest cases, however, Rule Editor is a rather difficult application to learn to use; most users will probably never bother with it. To make matters worse, the Rule Editor manual is poorly written. In particular, it often presumes knowledge of procedures that weren't defined earlier in the manual.

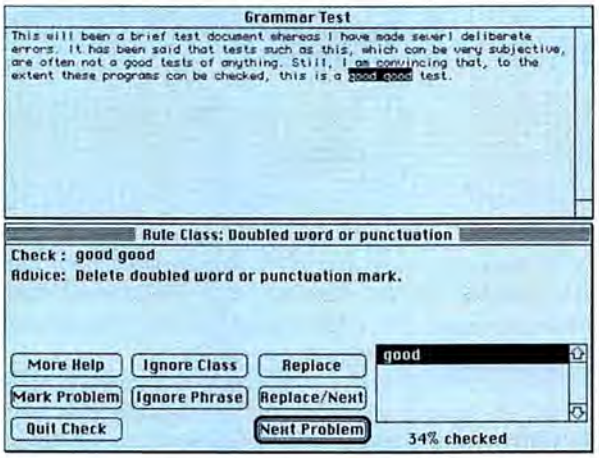


Figure 3: Grammatik Mac finished second to Correct Grammar in our tests. The checking process is similar to that of Correct Grammar. Grammatik Mac has separate buttons for ignoring a specific phrase and for ignoring the rule class.



Figure 4: Grammatik Mac includes Rule Editor, a separate application, for modifying or editing its rules. It is powerful enough to allow virtually any change you might wish to make. As this figure suggests, however, some serious effort is necessary to learn to use it, and most users probably won't bother.

A second editor application lets you modify Grammatik Mac's help screens. Reference Software suggests that you can use it to customize help screens for specific purposes such as classroom use.

Version 2.0 of Grammatik Mac offers some significant improvements over previous versions. The most obvious one is that it now automatically recognizes the word-processor format of the selected document instead of requiring you to specify it in advance. Most other improvements were intended to make the interface more interactive and more Mac-like. Reference Software has released several bug-fixed versions of 2.0 without assigning a new version number. If you're having any problems with the program, call Reference Software to make sure you have the latest version.

RightWriter

Unlike the two previous programs, RightWriter has no interactive mode. You can only use it to create a marked copy of the document, which you must then review with a word processor. Various document analyses (such as readability level) appear on-screen as well as at the end of the marked copy. As can Grammatik Mac, RightWriter can remove the marks after corrections have been made. Rather than accompany the marks with explanation or advice, however, RightWriter refers you to explanations in its manual.

The marked-copy approach does have some advantages. For example, it simplifies the process of working with the grammar checker itself: Simply click on Analyze Document, and you've finished. Still, the interactive method is more convenient overall. Both Grammatik Mac and Sensible Grammar let you choose the approach you prefer; RightWriter does not.

RightWriter does include five style templates together with the option of turning its various rule classes on and off. You can add single words to the program's usage dictionary, but this is a cumbersome procedure that the manual does a poor job of explaining. RightWriter does not include a spelling checker.

Sensible Grammar

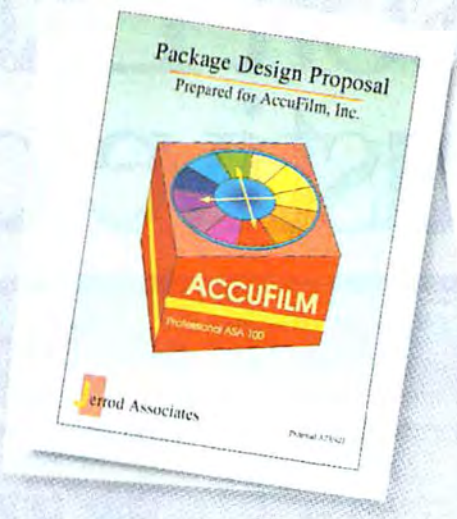
Sensible Grammar is primarily an interactive checker. It performs adequately but not as well as its competitors. Its major asset is that it has the simplest procedure for editing, deleting, and creating new phrase rules. Adding a new rule

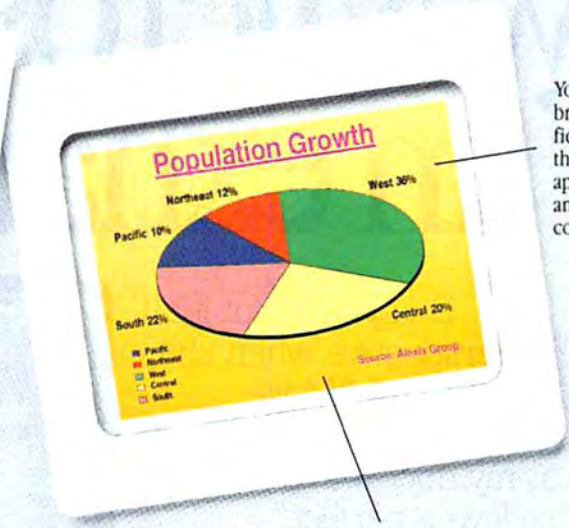
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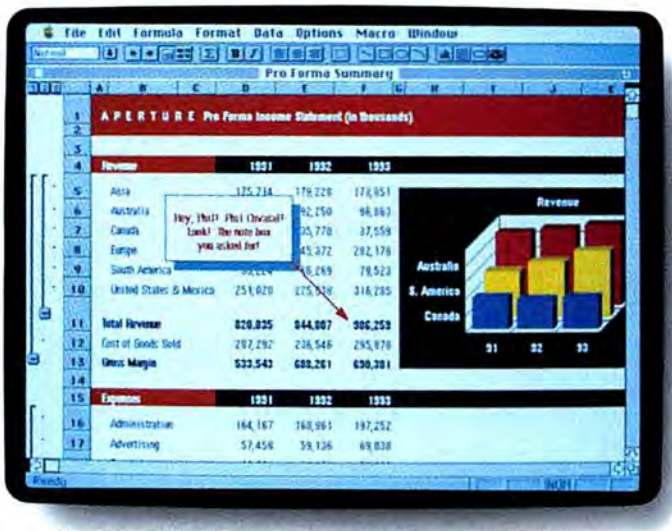
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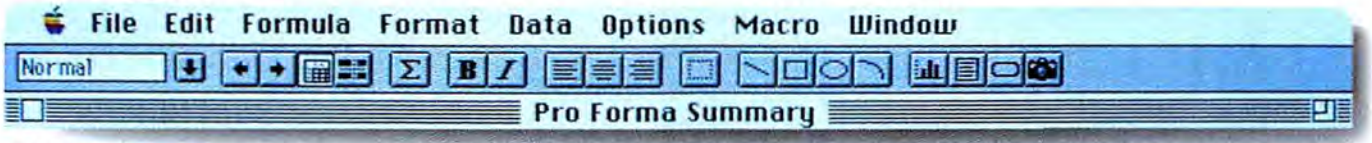


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version 3.0. The result respondence course.



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is as simple as typing in the correct and incorrect phrases on separate lines in the relevant list.

The program does not include style templates, nor does it have a spelling checker. It has no button for turning off a flagged rule while you're interactively checking a document, although it does let you add flagged phrases to an exceptions list. This requires clicking on the correct one of several poorly labeled icons (see Figure 5). Saving changes to the exceptions list is also awkward, requiring you to answer such cryptic questions as "Discard the (memory) changes also?"

Sensible Grammar also offers the alternative of marked-copy checking, but the usefulness of this function is limited in that it can't automatically delete the marks after you've made corrections. Also, the marked copy does not include any explanations of the marked errors.

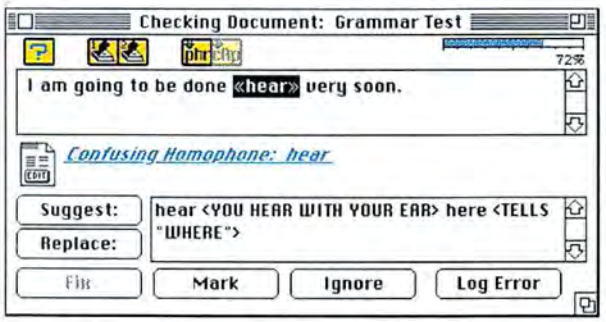


Figure 5: Sensible Grammar did the best job of detecting homophone errors, such as the one shown here — in fact, it was the only program that spotted this particular error. Of course, it also flagged several homophones that were not errors. Sensible Grammar's display makes the most use of color, but color doesn't clarify what the icons represent.

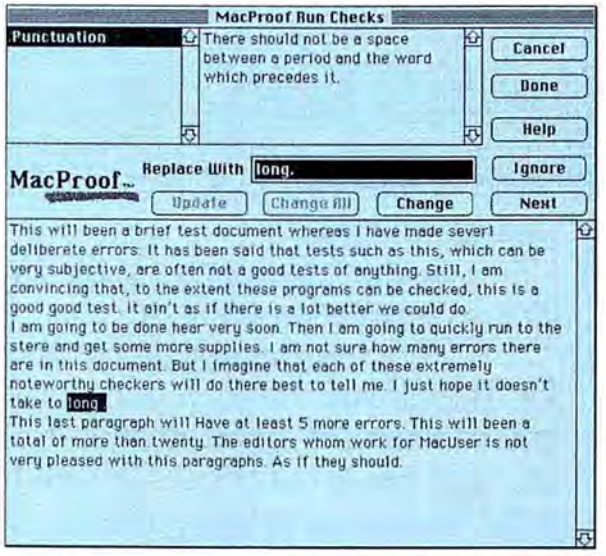


Figure 6: Among the grammar-checking programs, MacProof displays the most document text at a time. Unfortunately, it is the only program that does not allow free editing of the text. You can make changes only via the Replace With box.

Sensible Grammar has more than its share of irritations. For example, free text editing requires that you first click on the Edit icon, which in turn opens up a separate editable display. Checking for homophones requires as many as four operations: selecting Check Homophones from the Check menu, selecting Confusing Homophones in the window you obtain after selecting Change Phrase Usage Group Index from the Options menu, and possibly examining the Confusing Homophones phrase list and the Homophones parts list (it's not clear why Sensible Grammar needs two lists). No wonder it's called "confusing"! For another example of unnecessary ambiguity, try reading the manual's description of the Open Phrase Usage Group Index command.

MacProof

MacProof is the only program reviewed here that is a DA, which means that you can use it directly within your word processor as you would use a spelling checker. Although this appears to be an advantage, it's a relatively minor one, especially if you use MultiFinder.

MacProof has many of the same functions as the other programs. You can correct errors with the Change button, skip a particular instance with the Next button, or use the Ignore button to skip all instances of an error for the rest of a session (see Figure 6). You can edit words and phrases in its spelling and usage dictionaries and add new ones, using a well-designed dialog box that guides you through the procedure. MacProof has a menu option for turning specific usage rule classes on and off. You cannot do this while checking is in progress, however, because you cannot access any other window or menu — including MacProof's own menu — until MacProof has completely finished its checking.

Overall, MacProof does not compare favorably with its competitors. Its rule set is the smallest of any of the programs, which is probably why it detected the fewest grammatical errors in our tests (see the "Mistake Proof?" sidebar). It requires you to select the text and copy it to the Clipboard before it checks it. Although this approach has the advantage of permitting checking of selected portions of a document, it is mostly an inconvenience. Another inconvenience is that the analyses of document structure (for example, word count) require recopying the selection to the Clipboard. MacProof is also the only grammar checker that does not include difficulty-level indexes.

Probably its biggest limitation is that you cannot directly edit the text during checking, except via the small Replace With box. Thus, if a sentence requires an extended rewrite, you can't do it until MacProof has completely finished its checking and you've returned to your word processor.

MacProof is the only grammar checker we tested that is

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not compatible with any version of WriteNow or WordPerfect. In the case of MacWrite II, it is compatible only with version 1.0, even though version 1.1 has been out for more than a year. You can check the text of noncompatible versions, but you lose all special formatting (for example, italics) when you paste any changes back into the document.

[*As we went to press, we were unable to contact Lexpertise by telephone. All our attempts to reach the company resulted in a "number is disconnected" message. We don't know what this means about the company's or MacProof's future. — Ed.*]

The Bottom Line

The top two choices are clear: Correct Grammar and Grammatik Mac. Correct Grammar has the edge in the critical measure of error detection and in convenience and ease of use. Grammatik Mac has the advantage of providing a choice between the interactive and marking methods for checking a document. Also, it has more-extensive (although more difficult to use) procedures for customizing its checking procedures.

There is little reason to consider buying RightWriter or Sensible Grammar. Although RightWriter's marked-copy approach works as promised, RightWriter offers no advantages over Grammatik Mac's similar capabilities and it can't check a document interactively. Sensible Grammar, although respectable, is burdened with too many inconveniences. It also lacks several useful features, including a spelling checker and style templates. Finally, its manual needs work.

MacProof was a loser in almost every category. It was the least effective in detecting errors. It's the only program that requires a document to be copied to the Clipboard prior to checking, it prohibits editing of a document while it's being checked, and it's compatible with the fewest popular word processors. Incredibly, MacProof is also twice as expensive as any of the other programs.

At their best, grammar checkers helpfully point out specific mistakes that you might otherwise overlook and offer advice on how to correct them. Certainly, many people can benefit from using a grammar checker, but the technology is still evolving. In a few years, these programs (and others like them) are likely to be vastly improved, and faster CPUs and cheaper storage for larger rule sets will also play major roles. At that point, grammar checkers may join spelling checkers as indispensable writing tools and become as essential as a good word processor.

Ted Landau is a professor at Oakland University, Michigan, and is a frequent contributor to *MacUser*.

Table 1: Features of Grammar Checkers

	 **Correct Grammar 2.0** ★★★★½	 **Grammatik Mac 2.0** ★★★★½	 **MacProof 3.2.3** ★★	 **RightWriter 3.1** ★★★	 **Sensible Grammar 1.6.2** ★★★½
List price	$99	$99	$195	$95	$99.95
Pros	Best interactive checker. Easy to use and customize.	Interactive- or batch-mode operation. Rules can be edited.	DA.	Easy to use.	Easy rule editing. Interactive- or batch-mode operation.
Cons	No rule editing.	Rule Editor is difficult to use.	Small rule set. Expensive.	Batch mode only. No spelling checker. Marks refer you to the manual.	No style templates or spelling checker.
Company	Writing Tools, Inc. Division of WordStar International 1 Harbor Dr., Ste. 111 Sausalito, CA 94965 (415) 332-8692	Reference Software International 330 Townsend St. Ste. 123 San Francisco, CA 94107 (800) 872-9933 (415) 541-0222	Lexpertise 380 S. State St. Ste. 202 Salt Lake City, UT 84111 (800) 544-7686	QUE Software 11711 N. College Ave. Carmel, IN 46032 (800) 992-0244	Sensible Software, Inc. 335 E. Big Beaver Ste. 207 Troy, MI 48083 (313) 528-1950



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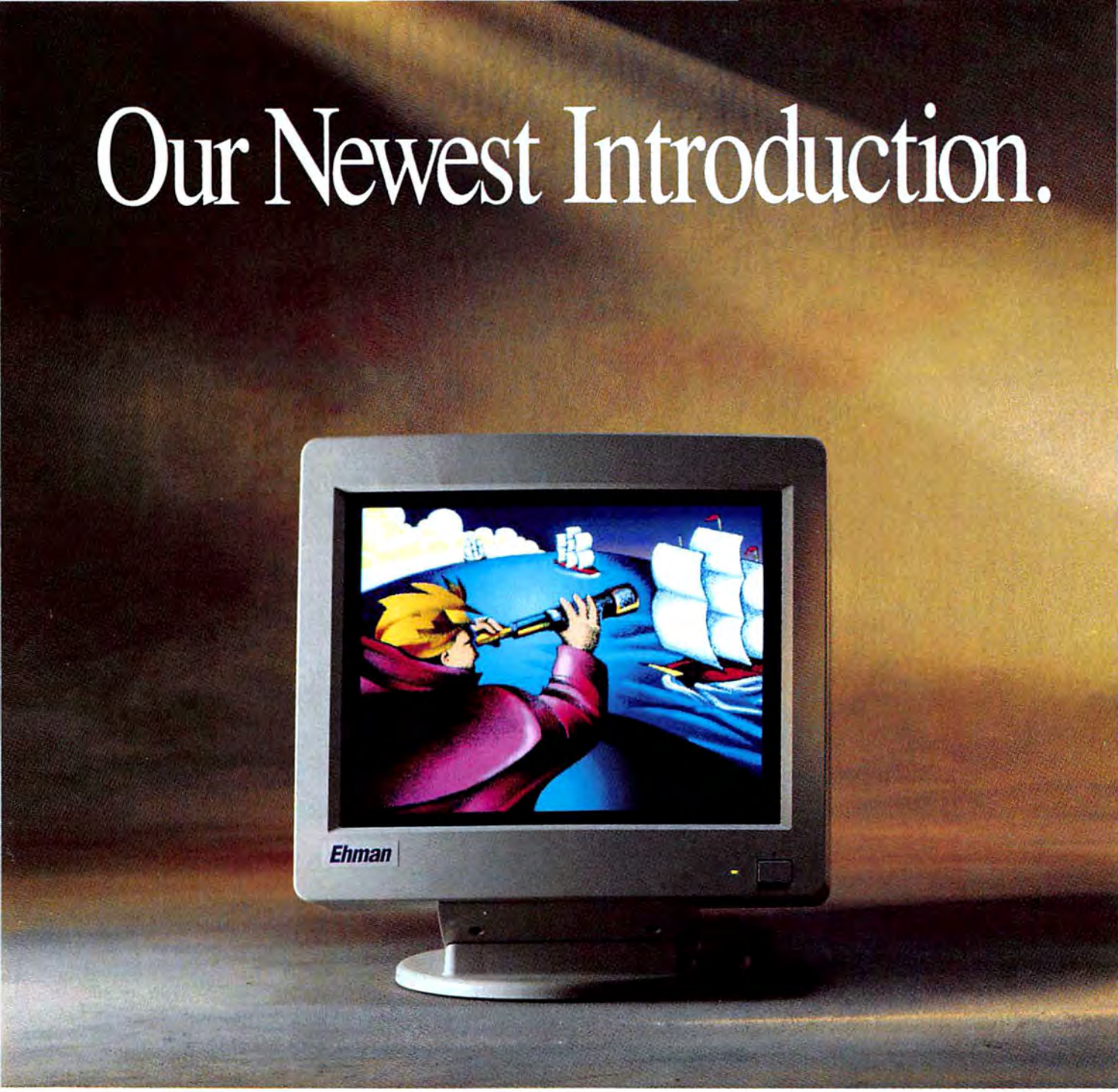
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Color monitor illustration by Rob Magiera

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PHOTOGRAPHY: WALT DENSON



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BY BRUCE FRASER AND THE MACUSER LABS STAFF



Figure 1: Workgroup-Printer Performance

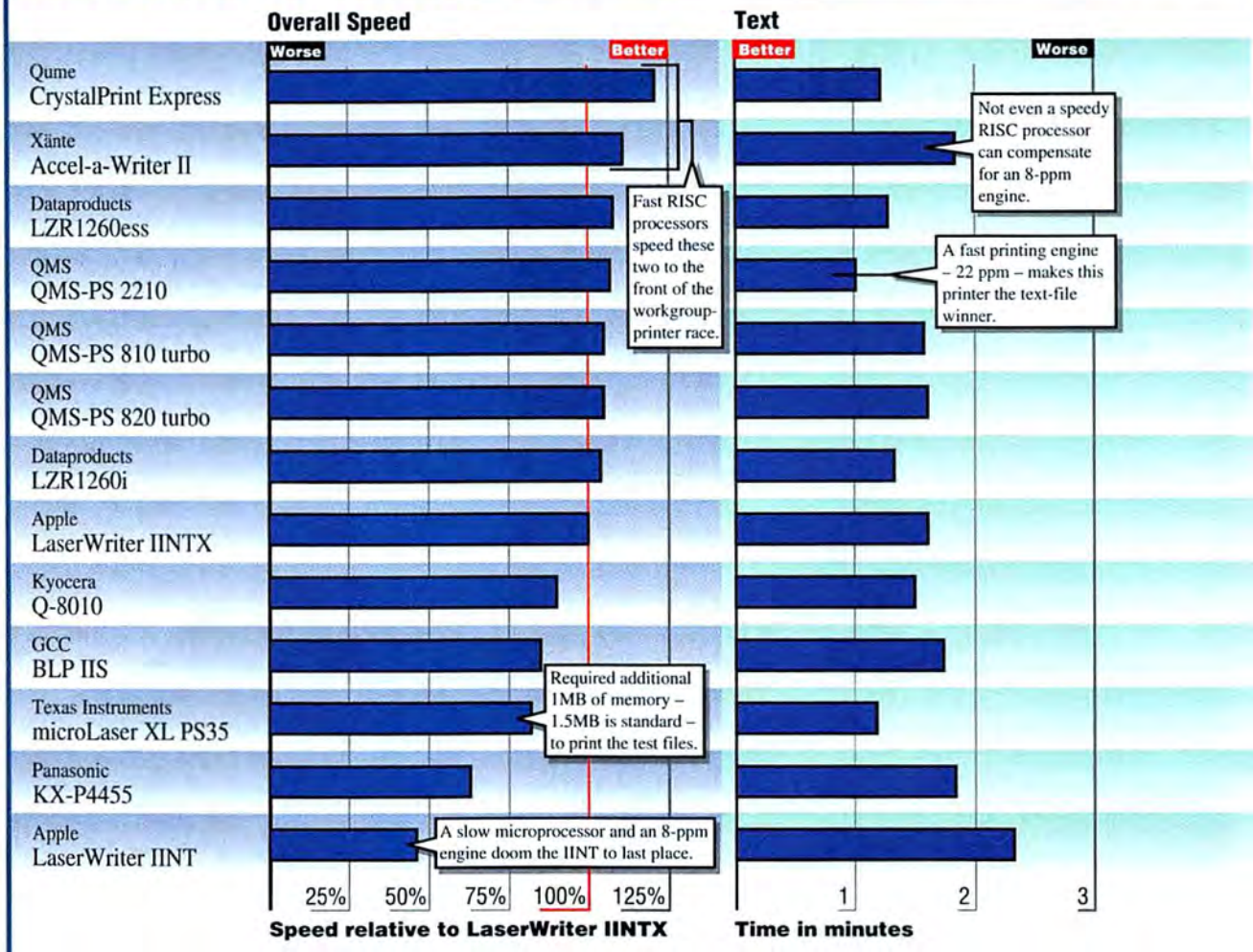


Figure 1: A workgroup printer's speed is based on two factors: how fast its processor can prepare a page for printing and how quickly the engine can print it once the page has been processed. Because different types of files test different combinations of these two factors, our PostScript-printer benchmark tests include three common document types: text, PostScript graphic, and page layout.

Overall Speed:

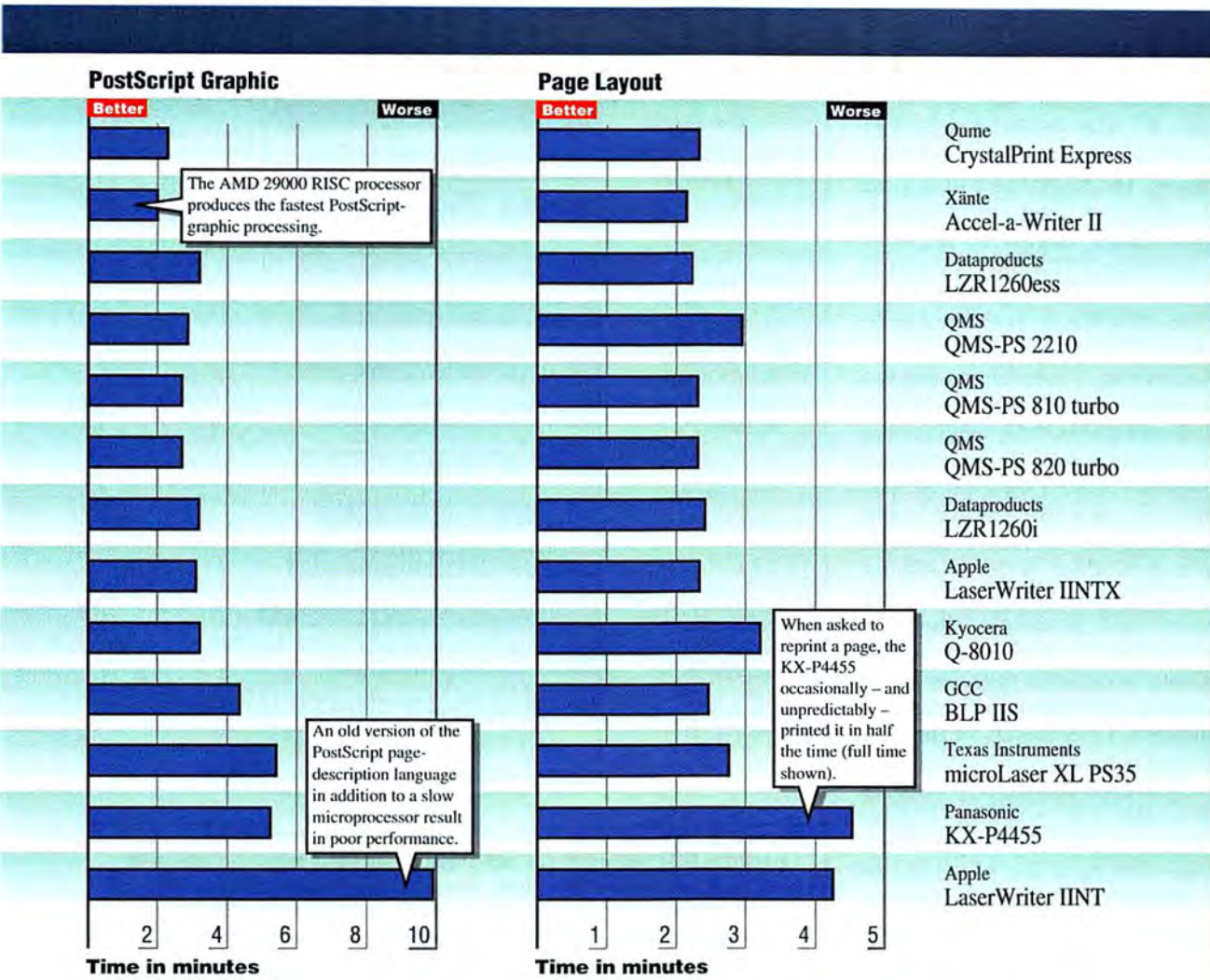
When we compared each printer's performance on all three test files with that of the Apple LaserWriter IINTX, we discovered that the fastest printer overall was the Qume CrystalPrint Express. Its 12-ppm engine and fast RISC processor make it a good choice if you're going to print a variety of documents. Otherwise, refer to the results of the individual tests for more-specific recommendations.

Text:

The ten-page Microsoft Word file tested raw engine speed, because little processing is needed to prepare a text page for printing.

Below workgroup printers on the PostScript evolutionary scale are personal printers with slow engine speeds — 4 or 6 ppm (pages per minute) — and meager 50-sheet paper trays. On another branch of the family tree are printers targeted for personal typesetting, which have resolutions higher than the normal 300 dpi (dots per inch). There's a performance penalty for all the extra dots these high-resolution printers create, however. Both classes of printers are valuable in their niches, but neither can satisfy the needs of a busy office (see the "Right Printer for the Right Job" sidebar).

A workgroup printer is designed for office use. Its speedy microprocessor and engine prevent it from becoming the modern equivalent of the water cooler — a hangout spot where workers kill time. A busy office that devours reams of paper quickly also needs a printer with large-capacity paper trays for input and output. A workgroup printer should also have a heavy *duty cycle* — the number of pages the printer can print in a month should exceed the number of pages that are actually printed in an average month. And last



As expected, the 22-ppm QMS-PS 2210 came in first, followed by the 16-ppm Texas Instruments microLaser XL PS35.

PostScript Graphic:

The speed of printing the test PostScript-graphic page mostly depends on microprocessor speed. The two RISC-based products came out on top, with the Xänte Accel-a-Writer II board edging out the Qume CrystalPrint Express. The loser was the Apple LaserWriter IINT — it took five times as long as the Xänte Accel-a-Writer II.

Page Layout:

The page-layout document tested a combination of processor horsepower, communications efficiency, and how well each printer handled the diverse elements contained on the page. Although the RISC-based Xänte Accel-a-Writer II board finished first, a few of the 68020-based printers were faster than the RISC-based CrystalPrint Express. The Apple LaserWriter IINT and Panasonic KX-P4455 had difficulty dealing with the complexities of the test document.

but not least, a workgroup printer should be affordable — after all, your business exists to make money, not to spend it.

MacUser Labs defines a workgroup printer as having an engine speed of at least 8 ppm and a processor at least as fast as a 12-megahertz Motorola 68000. We set a price ceiling of $10,000. Four of the printers in our test group use the 68000 processor. The Apple LaserWriter IINT couples it with an 8-ppm engine and is about the minimal printer suitable for a network. The IINT placed near the bottom in almost every speed test. The GCC BLP IIS also uses an 8-ppm engine, but its processor runs at 16.67 megahertz. Not only does it have a low price but it's also faster than the IINT.

The two other 68000-based printers use fast engines to compensate for their lack of processing power: The Texas Instruments microLaser XL PS35 uses a 16-ppm engine, and the Panasonic KX-P4455 sports an 11-ppm engine. The microLaser XL PS35 achieved respectable performance for a printer with a slow processor, but the Panasonic failed to impress.

The other workgroup printers use more-powerful processors, either a Motorola 68020 or a RISC (reduced-instruction-set computer) chip — the latter is a microprocessor technology that favors performance over complexity. The LaserWriter IINTX and the QMS-PS 810 turbo use the same 8-ppm Canon engine as does the LaserWriter IINT, but they use a 68020 processor instead of a 68000. The QMS-PS 820 turbo is identical to the QMS-PS 810 turbo except for its heavier-duty Canon engine and two paper trays. The Kyocera Q-8010 has a 10-ppm engine and is unique among the printers we tested in that all three of its ports — LocalTalk, serial, and parallel — are active simultaneously, enabling you to hook it up to IBM PCs as well as Macs. A few soon-to-be-released printers will offer this feature along with automatic emulation switching — switching among Adobe's PostScript page-description language and other printer languages such as PCL (see the "On the Horizon" sidebar).

The Dataproducts LZR1260i returns after being a top pick in our October '90 PostScript Printers Buyer's Guide (page 89). Now it's joined by the LZR1260ess, the same printer but with an external processor box and a 20-megabyte hard drive. Both couple a 68020 processor with a 12-ppm engine. The QMS-PS 2210, with its 22-ppm speed, benefits from the fastest engine and is the only printer we tested that can print on 11-x-17-inch, ledger-sized, paper (at 11 ppm).

The Qume CrystalPrint Express uses a 12-ppm engine and a Weitek XL-8200 RISC chip. The CrystalPrint Express is a PostScript-clone printer: It uses Qume's proprietary page-description language, which mimics Adobe's PostScript. In addition to high speed, the CrystalPrint Express offers a choice of resolutions: either the standard 300 x 300 dpi or the non-standard 600 x 300 dpi, easily switchable by controls on the front panel.

Xänte provides an unusual RISC-based product for users who find that their Apple LaserWriter II is showing its age: The Accel-a-Writer II board turns any LaserWriter II into a graphics speed demon and provides variable resolutions of up to 1,200 x 300 dpi — although to change the resolution, you must fiddle with DIP switches on the back of the board. The Xänte board uses an AMD 29000 RISC chip and replaces the controller board for any Apple LaserWriter II-series printer (boards are also available for the LaserWriter and LaserWriter Plus printers). Like the Qume CrystalPrint Express, the Accel-a-Writer uses a PostScript-clone language, in this case the PhoenixPage language from Phoenix Technologies.

Figure 2: Image Quality

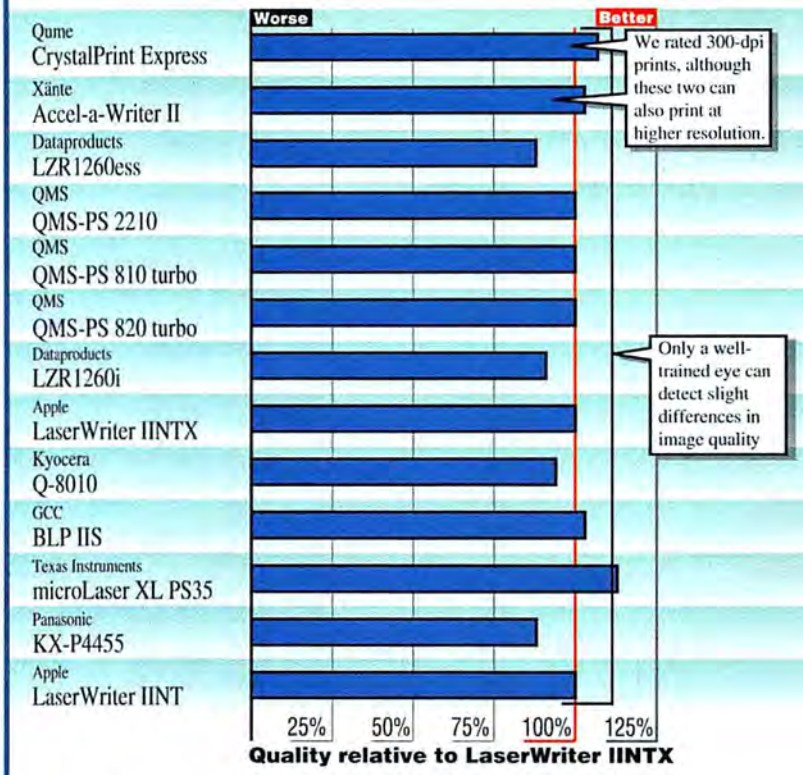


Figure 2: We asked our panel of jurors to compare the image quality of our LaserWriter IINTX benchmark with each printer's page-layout output — a gray-scale scan, many font sizes, and gray ramps. There's not much difference between the winners and losers: All the printers received good to excellent ratings. The Texas Instruments microLaser XL PS35 edged out the others, but there's almost no difference between its output and that of the last-place printers.

We ran the 12 printers — and the Xänte board installed in a LaserWriter IISC — through MacUser Labs' printer benchmark tests to determine printing-speed, paper-handling, ease-of-use, and image-quality ratings. Instead of finding a clear overall winner, we discovered that most of the printers had good and bad points. We did find, however, that it may be time to retire an old favorite: the Apple LaserWriter IINT.

Network Needs

When considering a workgroup printer, first compare the number of pages you need the printer to handle with the manufacturer's recommended



8 point type
AaBbCcDdEeFfGgHhIiJjKkLlMmNnO
AaBbCcDdEeFfGgHhIiJjKkLlMmNnO

Texas Instruments microLaser XL PS35



8 point type
AaBbCcDdEeFfGgHhIiJjKkLlMmNnO
AaBbCcDdEeFfGgHhIiJjKkLlMmNnO

Apple LaserWriter IINTX



8 point type
AaBbCcDdEeFfGgHhIiJjKkLlMmNnO
AaBbCcDdEeFfGgHhIiJjKkLlMmNnO

Panasonic KX-P4455

duty cycle. We tested three categories of printers: heavy-, medium-, and light-duty.

The Dataproducts' LZR1260i and LZR1260ess, Panasonic KX-P4455, QMS-PS 2210, and Texas Instruments microLaser XL PS35 are heavy-duty printers, with monthly duty cycles of 20,000 pages or more — about 1,000 pages a day. Although the Panasonic KX-P4455 has a heavy-duty engine, its sluggish performance when printing complex page-layout documents would be a serious drawback in a graphics shop that needed to print in large volume.

The Kyocera Q-8010, the QMS-PS 820 turbo, and the Qume CrystalPrint Express are medium-duty printers, with a 10,000-page recommended monthly maximum duty cycle. The remaining workgroup printers are light-duty printers, with a recommended monthly maximum page count of 5,000 or less. Although Apple declines to state recommended duty cycles for its printers, other vendors that use the same Canon engine generally recommend a 5,000-page-per-month maximum.

The GCC BLP IIS has the lowest recommended page count per month, at 3,000. Although a BLP IIS isn't hefty enough to serve the needs of a large network, its low cost may make it worthwhile to buy several and distribute them throughout your network.

Besides having a recommended duty cycle, printers are also rated for a certain engine life — Canon, for example, rates the 8-ppm engine used in the Apple LaserWriter II-series printers at 300,000 pages — but this is a less useful specification than the duty cycle. Most printers don't suddenly stop working when they reach the magic number: We know of at least one original Apple LaserWriter that has printed more than 1.5 million pages, but printers become less reliable once the engine-life limit has been reached. This dip in reliability usually manifests itself in the form of paper-handling difficulties and frequent jams. LaserWriter II owners who are considering the Xänte Accel-a-Writer II board should decide whether there's enough useful life left in their LaserWriter's engine to make such a purchase worthwhile.

Paper Chase

A heavy duty cycle and a long engine life are moot points if a printer is slow. Speed is probably the most important buying factor for any printer buyer, especially a buyer for a workgroup. Printer speed is a composite of two factors: first, how fast the printer's processor can prepare the page — that is, get it ready to be printed — and second, how quickly the engine can print it after the page has been processed. The MacUser Labs' PostScript-printer benchmark tests focused on both speed factors in the printing of three real-world types of output: text, PostScript graphics, and a composite page. A ten-page Word document using only two fonts — Times and Helvetica — tested primarily engine speed. A PostScript graphic created in Adobe Illustrator tested processor speed. A page layout containing a gray-scale scan, blends, and text — also created in Adobe Illustrator — tested a combination of microprocessor power, LocalTalk-communication efficiency, and how quickly a printer could interpret the composite elements.

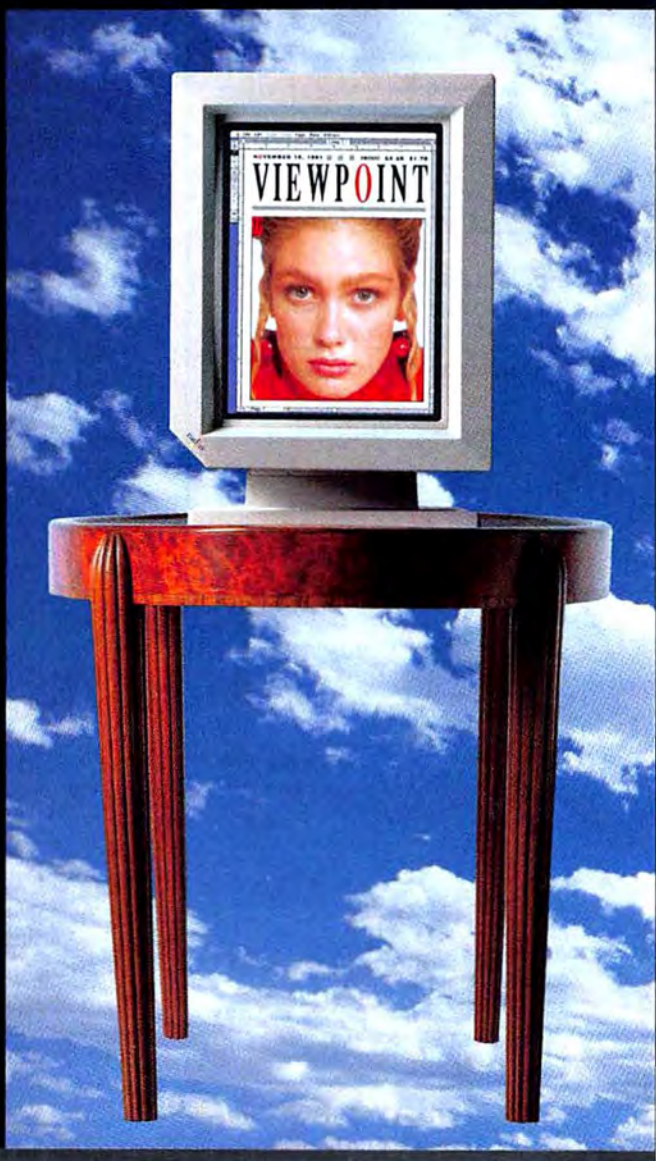
The overall-speed winner was the RISC-based Qume CrystalPrint Express, with its 12-ppm engine (see Figure 1). The CrystalPrint was followed closely by the Xänte Accel-a-Writer II — also RISC-based — which was installed in an 8-ppm Apple LaserWriter IISC. The Motorola 68020-based printers — the Dataproducts LZR1260ess, QMS-PS 2210, QMS-PS 810 turbo and QMS-PS 820 turbo, Dataproducts LZR1260i, and Apple LaserWriter IINTX — followed. The GCC BLP IIS was not among the fastest printers, but its low price makes it an attractive buy. We considered the Apple LaserWriter IINT to be too slow for all but the least demanding workgroup situations.

Individual test results show that printer performance relates directly to the kind of pages being printed. If your typical documents contain text and simple graphics, engine speed is of primary importance, but a graphics department gets much better results from a printer with a fast processor. You should also consider whether you will be better served by a single printer with all-round good performance or by two or more less expensive but more specialized printers.

In the engine-intensive text test, the QMS-PS 2210 took first place easily, by virtue of its 22-ppm engine, followed closely by the 16-ppm Texas Instruments microLaser XL PS35 — a slightly larger version of the popular

radius™

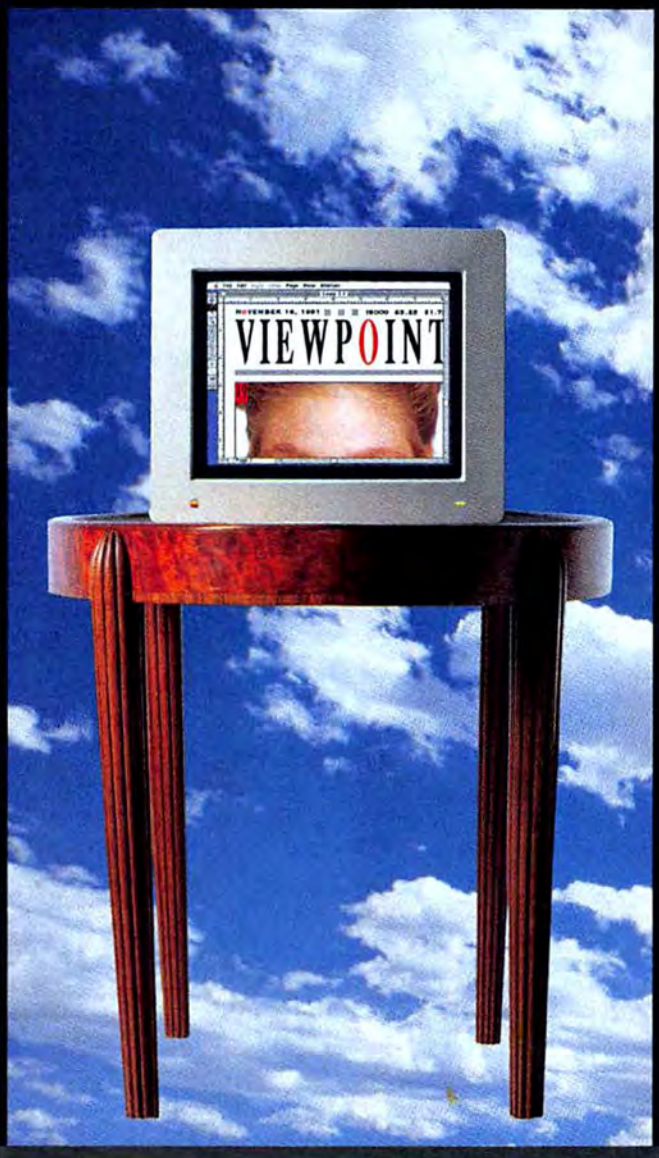




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The Right Printer for the Right Job



1. Dot-matrix: less than 1-ppm engine; no intelligence. Too noisy and slow but the only solution for impact-printing multipart forms and checks.



2. Personal inkjet and laser: 1- to 8-ppm engine; no intelligence. Inexpensive and designed for single-Mac use.



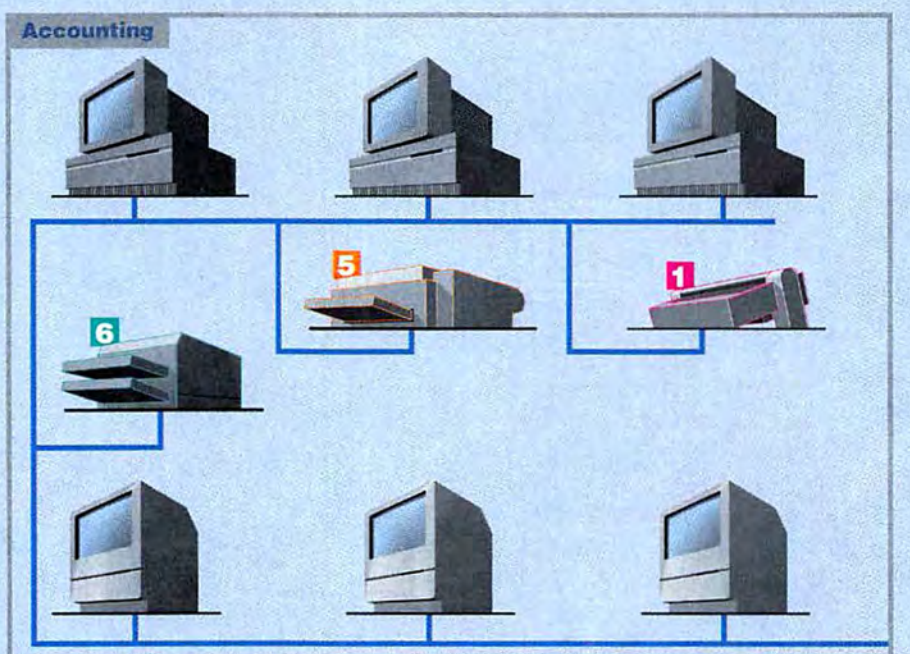
3. Personal PostScript: 4-to-6-ppm engine; 68000, 68020, or RISC processor. Inexpensive but have slow, light-duty engines; some have processors fast enough to make them attractive to graphics users.



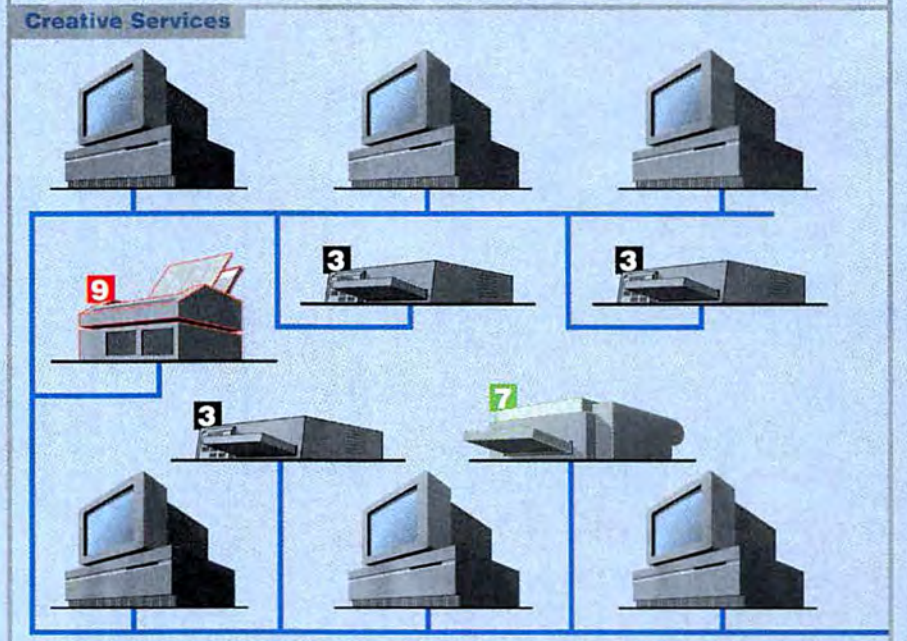
4. Light-duty workgroup PostScript: 8-ppm engine; 68000 processor. Inexpensive enough for several to be distributed on one network



5. Medium-duty workgroup PostScript: 8- to 12-ppm engine, 68020 or RISC processor. Fast engines and microprocessors can handle text and graphics printing from five to ten Macs.

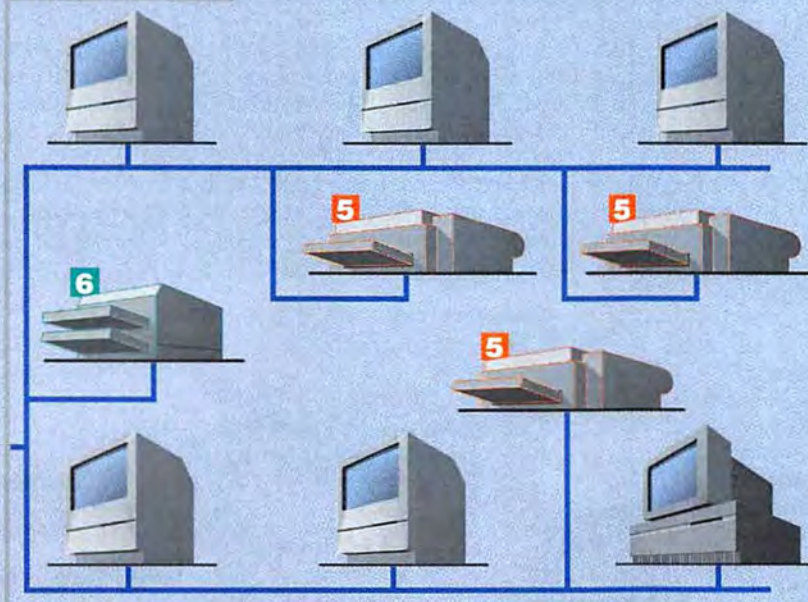


A medium-duty and a heavy-duty workgroup PostScript printer handle printing spreadsheets and budget reports. A dot-matrix printer is used for multipart forms and checks.



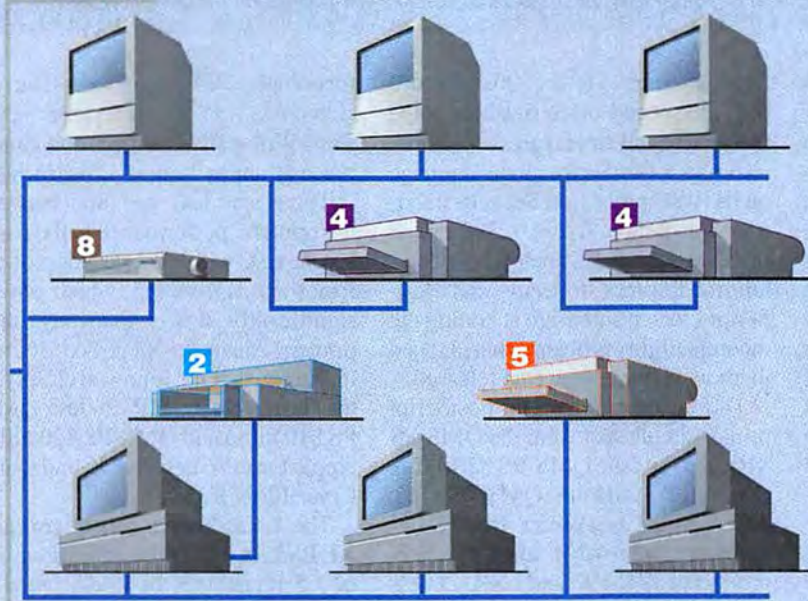
Personal PostScript printers with fast 68020 or RISC processors and a high-resolution PostScript printer pump out processor-intensive graphics and page-layout pages. The color thermal-wax PostScript printer handles color comps.

Word Processing



Three medium-duty workgroup PostScript printers handle the bulk of the printing needs. A heavy-duty workgroup printer is used for long reports.

Marketing



A color inkjet printer is used to create color transparencies and presentations. Two light-duty workgroup PostScript printers handle the needs of most of the staff, and one medium-duty workgroup PostScript printer prints the more intensive, lengthy documents. Executives may want a personal inkjet or laser printer in their office for security and convenience.



6. Heavy-duty workgroup PostScript: 12- to 22-ppm engine; 68020 or RISC processor. Fast and heavy-duty engines can handle large printing volumes; many include large paper trays and output bins.



7. High-resolution PostScript: 8- to 12-ppm engine with 600-to-1,200-dpi resolution; 68020 or RISC processor. Increased resolution for greater text clarity and gray-scale rendition; designed for personal typesetting.



8. Color inkjet: 1- to -2 ppm engine; no intelligence. Inexpensive color for presentations and overhead transparencies



9. Color thermal-wax PostScript: 1- to 2-ppm engine; 68020 or RISC processor. Have 300-dpi resolution and PostScript language; print high-quality color comps.

On the Horizon

It's hard to imagine how printer manufacturers can sleep at night — in this fast-moving industry, what's hot today can be obsolete tomorrow. It seems that hardly a day goes by without a new printer, a new technology, or a new feature being introduced. Out of this avalanche of new technology, two trends are emerging: Printers are getting faster — using speedier engines and RISC processors — and they're gearing up for network use with better paper handling and automatic port- and emulation-switching features.

Consider the Hewlett-Packard LaserJet IIISi, for example: This 17-ppm heavy-duty network workhorse has a 50,000-page-per-month duty cycle, a powerful AMD 29000 RISC processor, two whopping 500-sheet paper trays, an optional Ethernet interface, and the ability to do *duplex printing:* printing on both sides of each sheet. The IIISi uses microfine toner and features a new Canon engine that HP improves on with its proprietary resolution-enhancement technology to produce print quality that's comparable to that of higher-resolution printers. Speed tests with a preproduction model showed faster times than those of any of the workgroup printers we tested for this report. The IIISi will be produced for the Mac and the PC; the IIISi for the Macintosh, which includes 35 fonts, 5 megabytes of RAM, and a LocalTalk interface, will list for $7,190. Hewlett-Packard, 19310 Pruneridge Avenue, Cupertino, CA 95014; (800) 752-0900.

QMS' networkhorse is the 20-ppm QMS-PS 2000 ($15,995). Sporting a MIPS R3000 RISC chip, the QMS-PS 2000 has automatic port and emulation switching, a 70,000-page-per-month duty cycle, and the ability to print ledger-sized (11 x 17 inch) documents. It comes with two 250-sheet paper trays, and there's an optional 1,000-sheet paper tray.

QMS is also introducing the QMS-PS 815 ($4,995) and the QMS-PS 825 ($5,995). These printers are upgrades of the current 8-ppm models, the QMS-PS 810 turbo and QMS-PS 820 turbo, respectively, that add automatic port and emulation switching. QMS, Inc., One Magnum Pass, Mobile, AL 36618; (800) 523-2696.

LaserMaster has introduced the 400XL ($9,995), a high-resolution workgroup printer with a 20-ppm engine. The 400XL prints at 400 dpi; uses Microsoft's TrueImage, a PostScript-clone language; and is



Four new printers to keep your eye on (clockwise from right): the fast Hewlett-Packard LaserJet IIISi; the LaserMaster 400XL, which can print on 11-x-17-inch paper; and Kodak's Ektaplus 7016PS, which doubles as a 6-ppm photocopier.

Texas Instruments microLaser PS35 (see "Personal PostScript Printers," March '91, page 116) — and the Qume CrystalPrint Express. The Dataproducts LZR1260i and LZR1260ess also boast a 12-ppm engine but couldn't quite keep up with the Qume CrystalPrint Express' fast processor. The Kyocera Q-8010, with a 10-ppm engine, is slightly faster than the 8-ppm machines. The Xänte Accel-a-Writer II's fast RISC processor was limited by the 8-ppm engine of the Apple LaserWriter IISC in which the board was installed.

In the complex PostScript-graphic test, the results proved once more that engine speed is only a small part of the story in rating printer performance. The Xänte board — which uses the PhoenixPage PostScript-clone language and an AMD 29000 RISC chip — was the clear winner in this test. Even when set to 600 x 300 dpi, it still beat the second-place finisher — the Qume CrystalPrint Express — which also runs a PostScript-clone language on its RISC processor. Set at its maximum resolution, 1,200 x 300 dpi, it finished only slightly behind the CrystalPrint Express. It seems that PostScript-clone printers are shedding the incompatibility problems that plagued them when they were first released.

The fastest true Adobe PostScript printers in this test were the QMS-PS 810 turbo and the QMS-PS 820 turbo, closely followed by the QMS-PS 2210. The Apple LaserWriter IINTX finished next, narrowly beating the Dataproducts LZR1260i and LZR1260ess and the Kyocera Q-8010. The Texas Instruments microLaser XL PS35's performance on this test was disappointing — its 12-megahertz Motorola 68000 processor just isn't fast enough for complex PostScript pages. The real slowpoke was the venerable Apple LaserWriter IINT, which took almost twice as long as the next-slower printer.

There was less variation between the printers' performance in the page-layout test, with the exception of the Panasonic KX-P4455, which proved significantly slower than any other printers. Again, the Xänte board turned in the fastest time, followed closely by the Dataproducts LZR1260ess, QMS-PS 810 turbo and QMS-PS 820 turbo, Apple LaserWriter IINTX, and Qume CrystalPrint Express.

The Texas Instruments microLaser XL PS35 in its standard configuration of 1.5 megabytes of RAM failed to print this page. The other printers had no problem with their standard memory configurations of 2 to 6 megabytes (see Table 1). When we added RAM, bringing the total to 2.5 megabytes,

unique in using a NuBus interface rather than LocalTalk. The 400XL has two 250-sheet paper trays and can print 11-x-17-inch documents. LaserMaster, 7156 Shady Oak Road, Prairie, MN 55344; (612) 944-6069.

Kodak has also entered the workgroup-printer market, with the Ektaplus 7016PS, a 16-ppm PostScript printer with a unique difference: It's also a 6-ppm photocopier. The Ektaplus 7016PS comes with a 68020 processor and 4 megabytes of RAM for a list price of $6,995. Eastman Kodak Co., 343 State Street, Rochester, NY 14650; (800) 445-6325.

Expect the next generation of Adobe PostScript workgroup printers to use Adobe's PostScript Level 2 — the first significant upgrade to this industry-standard page-description language. The first PostScript Level 2 printer comes from Dataproducts. The 9-ppm LZR960 ($2,995) features a Weitek RISC processor, a small footprint, automatic port switching, a 250-sheet paper tray, and a SCSI port for a hard drive. Software and Hardware That Fits, a mail-order company, will also sell the Dataproducts printer, under the name RealTech Laser and at a list price of $1,995. Dataproducts Corp., 6219 De Soto Avenue, Woodland Hills, CA 91365; (818) 887-8000. Software and Hardware That Fits, 610 S. Frontier, Conroe, TX 77301; (800) 972-3018.

The new Texas Instruments 9-ppm microLaser Turbo and the 16-ppm microLaser Turbo XL will feature a RISC processor, 2.5 megabytes of RAM, and PostScript Level 2. Other features will include automatic port and emulation switching and a SCSI port for an optional hard drive. The microLaser Turbo will list for $3,199, and the microLaser Turbo XL will list for $5,199. And some good news for current 68000-based-microLaser owners: Upgrades will be available for approximately $1,600. Texas Instruments, Inc., P.O. Box 202230, Austin, TX 78720; (800) 527-3500.

NEC Technologies is replacing its 68000-based printers — the Silentwriter Model 90 and Model 290 — with the RISC-based Silentwriter Model 990 ($4,495). This 8-ppm printer will feature 2 megabytes of RAM, a SCSI interface for a hard drive, and a 200-sheet paper tray. NEC, 141 Massachusetts Avenue, Boxborough, MA 01719; (508) 264-8000.

NewGen is also revamping its line of printers. The TurboPS/480 and TurboPS/360 will be replaced by the new RISC-based TurboPS/480e and TurboPS/360e. The printers in the new line will have 6 megabytes of RAM (upgradable to 32 megabytes) and will also feature auto-emulation and high resolution. In addition, an Ethernet option will be available. The TurboPS/480e will cost $7,495, and the TurboPS/360e will cost $4,495. NewGen, 17580 New Hope Street, Fountain Valley, CA 92708; (714) 641-8600.

Microtek has begun shipping its new TrueLaser ($2,695), which uses Microsoft's TrueImage PostScript-clone language. This 6-ppm printer is powered by the AMD 29000 RISC processor and comes with 35 fonts and automatic emulation switching. Microtek Lab, Inc., 680 Knox Street, Torrance, CA 90502; (213) 321-2121.

In addition to all the workgroup-printer news, there's also some excitement about budget printers. GCC Technologies has unveiled the BLP Elite, the lowest-priced printer with true Adobe PostScript — for a remarkably low $1,599. This 4-ppm personal printer has a 68000 processor and comes with 17 PostScript fonts, 2 megabytes of RAM, and built-in AppleTalk for network use. There is also a $799 upgrade that lets GCC PLP II owners graduate to the BLP Elite. GCC Technologies, 580 Winter Street, Waltham, MA 02154; (800) 427-7777 or (617) 890-0880.

— Paul Yi

the microLaser XL PS35 turned in a respectable performance. With RAM increased to 4.5 megabytes, it was slightly faster, taking a bit longer than the Apple LaserWriter IINTX and the GCC BLP IIS.

After our speed tests were completed, we also ran a page-layout test to rate image quality. Our jurors found image quality from all the printers to be generally good (see Figure 2). They did prefer the optional higher-resolution output from the Xänte board and the Qume CrystalPrint Express to the standard 300-dpi output produced by all the other printers, but that was to be expected. Higher resolutions may produce crisper images, but they increase printing time by about 30 percent on the CrystalPrint and around 10 to 15 percent with the Accel-a-Writer board at the maximum resolution. In the 300-dpi range, the differences among the printers were very small, but the Texas Instruments microLaser XL PS35 produced slightly better-looking output than the rest of the pack and the output of the Panasonic, the Dataproducts, and the Kyocera printers was slightly below average.

We also printed a test page that included a downloadable TrueType font. Networks will undoubtedly be upgrading to System 7, and the last thing you want is a printer that's incompatible with Apple's new font technology. Only the Kyocera Q-8010 had trouble printing this page: Although the printing process proceeded without an error message, a page never emerged from the printer. Kyocera is aware of the TrueType incompatibility, which should be fixed by the time you read this. The Texas Instruments microLaser also failed to print the TrueType page when configured with 1.5 megabytes of RAM — increasing the RAM to 4.5 megabytes took care of the problem, however. The conclusion here is that whatever your workgroup printer is, it won't be a stumbling block when your network converts to System 7.

Ease of Setup and Use

Setting up a workgroup printer is as straightforward as setting up any other laser printer, and printers with Canon engines are the easiest kind. The single Canon cartridge contains all the replaceable elements and simply slides into place. The other printers have separate developer, toner, and drum units that are only slightly more difficult to install.

The Kyocera Q-8010, for example, requires that you install the drum within five minutes of removing the packaging, because the drum is light-sensitive

and a longer exposure to light will ruin it. This process takes only about 30 seconds, so the time constraint shouldn't be a problem. The only printers that gave us trouble when we installed the consumables were the Qume CrystalPrint Express and the Panasonic KX-P4455. The drum for the CrystalPrint has no protective covering, so it's easy to scratch, and the developer unit spills a small amount of toner when you install it. With the KX-P4455, you have to pour toner out of a plastic bottle into the toner hopper — a messy operation no matter how careful you are.

In addition to installing the consumables, you have to set the printer for use as a Macintosh PostScript printer. Luckily, PostScript is the default emulation mode for most of the printers and LocalTalk is the default communication mode. You can change these settings on the printers' front panel. The Apple printers, however, use DIP switches for this purpose, which is a nuisance. The Dataproducts LZR1260i and LZR1260ess come configured with the RS-232 port as the default communications mode and must be changed to LocalTalk. This isn't difficult but requires you to read the manual.

The trickiest setup is that of the Xänte Accel-a-Writer II, because it requires hardware installation. Luckily, the board installs easily in a LaserWriter II, replacing the existing controller board. We used a LaserWriter IISC, but the procedure is the same for any LaserWriter II-series printer. A series of DIP switches controls the emulation, communication, and resolution parameters. We'd rather have these controls on the front panel, but the LaserWriter II lacks one, so Xänte had little choice in the matter.

Paper Handling

The last critical aspect of a workgroup printer is how well it handles paper. If a printer is supporting 20 Macs, there're going to be a lot of pages coming out of the printer, so it's necessary to have a large-capacity paper tray as well as a tray that can accommodate the output.

We first ran a 50-page print job to check that the output tray could hold 50 sheets. Only the Qume CrystalPrint Express had a problem: The paper started to splay after the printer had produced 40 sheets, because of the output tray's unusual curved shape. We also had more than our share of paper jams with this printer, and the

The Bottom Line

Not every PostScript printer is built for a demanding business environment. To meet the needs of a busy workgroup, a PostScript printer should have at least the speed and power of an Apple LaserWriter IINT: an 8-ppm engine and a Motorola 68000 processor. Just as there are different types of workgroups — accounting departments, design studios, secretarial pools — different workgroup printers satisfy different needs. Which one you choose depends on whether your workgroup prints mostly text and simple graphics or prints reams of complex layouts and illustrations.

The volume of printing on your network is another important factor, so we divide our printer recommendations into three categories: heavy-, medium-, and light-duty. For heavy-duty printing, we recommend the **QMS-PS 2210** ($9,995), with its fast 22-ppm engine — although its 68020 processor may be a little slow for complex graphics work. The QMS-PS 2210 is pricey, but it's also the only printer that prints ledger-sized (11-x-17 inch) pages, an important consideration for large spreadsheets or tabloid-sized layouts. The paper trays must be configured for the correct paper size with a series of magnets, so if you plan to use several different paper sizes, you should probably buy extra paper trays.



Print 1,000 or more pages a day? Pick one of these heavy-duty champs (clockwise from bottom left): the QMS-PS 2210, Texas Instruments microLaser XL PS35, Dataproducts LZR1260i, and Dataproducts LZR1260ess.

Our only other reservation about the QMS-PS 2210 concerns its lack of flexibility in paper handling, which is where the **Dataproducts LZR1260ess** ($5,995) and **LZR1260i** ($4,995) excel. Both are heavy-duty, reasonably fast printers with more paper-handling features than any of their competition. The LZR1260ess also features a 20-megabyte hard drive built in to the external controller — the LZR1260i has no SCSI port, and the controller is built in to the actual printer.

For those on a tight budget or for offices that print primarily text and simple graphics, the **Texas Instruments microLaser XL PS35** ($4,644) is a real bargain. We were impressed with the performance of its 16-ppm engine, although its 12-megahertz 68000 CPU makes it ill-suited for printing complex graphics. The standard 1.5 megabytes of RAM is inadequate for anything except very simple documents. If you buy this printer, add at least 1 megabyte of extra RAM.

design of the engine makes it quite difficult to remove jammed paper. Worse, when the jam occurred near the toner unit, the next 20 or so pages came out dirty.

The Dataproducts LZR1260i and LZR1260ess have a paper sensor in their output tray. When the page count in the output tray reaches 250 pages, the printer goes off-line and sends an error message over the network asking you to empty the tray — a useful feature in a heavy-duty workgroup printer.

Several printers feature multiple paper trays. The Dataproducts LZR260i and LZR1260ess and the Qume CrystalPrint Express come with software that lets you choose, on a per-page basis, which tray you want to use. You can, for example, keep letterhead in one tray and plain paper in another or alternate between two sizes of paper. The QMS multitray printers (the QMS-PS 820 turbo and the QMS-PS 2210) come with a DA that lets you select the default paper tray and switch automatically to the second tray when the first is empty, but it doesn't let you choose which tray to use on a per-page or per-job basis. QMS is working on more-sophisticated software — which should be shipping by the time you read this — that will give you greater control and flexibility in switching between paper trays.

A Group Decision

As we've found in the past, finding the perfect printer depends on your printing needs. What separates workgroup winners from losers is speed and paper-handling ability (see the "Bottom Line" sidebar), because all the printers we tested showed good-to-excellent print quality. Some printers shine when printing text, some when printing more-complex images: Your ideal network may consist of one printer with a fast engine, or it may contain several printers — some having fast engines and others fast processors.

Although new printers are constantly being introduced with new features, new technology, and lower prices, there's never been a better time to buy a workgroup printer. You could always wait for the incremental improvements of the next generation of printers, but today's business needs must be met today. Luckily, these workgroup printers are ready for the challenge.

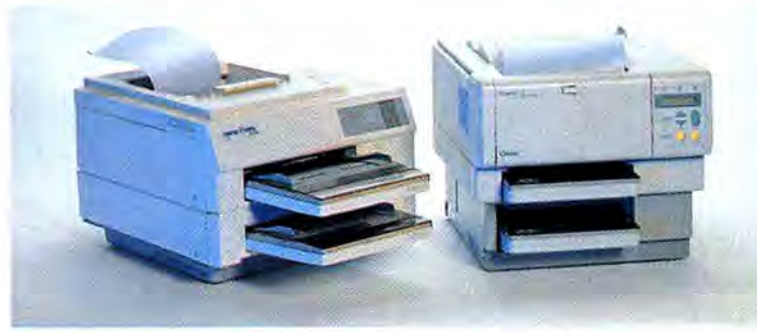
Bruce Fraser is an author, consultant, and frequent contributor to *MacUser*.

In the medium-duty range, the **QMS-PS 820 turbo** ($6,495) is quite speedy and features two paper trays and an optional hard drive for font caching. You should also keep an eye out for the soon-to-be-released QMS-PS 825, which adds automatic port and emulation switching.

The **Qume CrystalPrint Express** ($5,595) is the fastest workgroup printer overall and has powerful features such as two resolution settings and software paper-tray selection. We have strong reservations about its touchy paper-handling abilities, however, especially in a high-volume setting. For a department whose work consists primarily of complex graphics, it's nevertheless worth considering.

For a light-duty environment, the **GCC BLP IIS** ($2,899) is a lot of printer for the money, comparing favorably in features and performance with the considerably more expensive QMS-PS 810 turbo and Apple LaserWriter IINTX.

For top speed in graphics applications, don't overlook the **Xänte Accel-a-Writer II** ($2,495), an upgrade controller board for any Apple LaserWriter II-series printer. Its variable resolution is a plus, although you have to turn the printer off and on after changing the resolution — an inconvenience in a workgroup environment.



An office can crank out 500 pages a day with the QMS-PS 820 turbo (above left) or the Qume CrystalPrint Express, our medium-duty winners.



The low-cost GCC BLP IIS is your best choice for a light-duty environment — unless you need the blazing graphics performance of the Xänte Accel-a-Writer II upgrade board for Apple LaserWriter II-series printers.

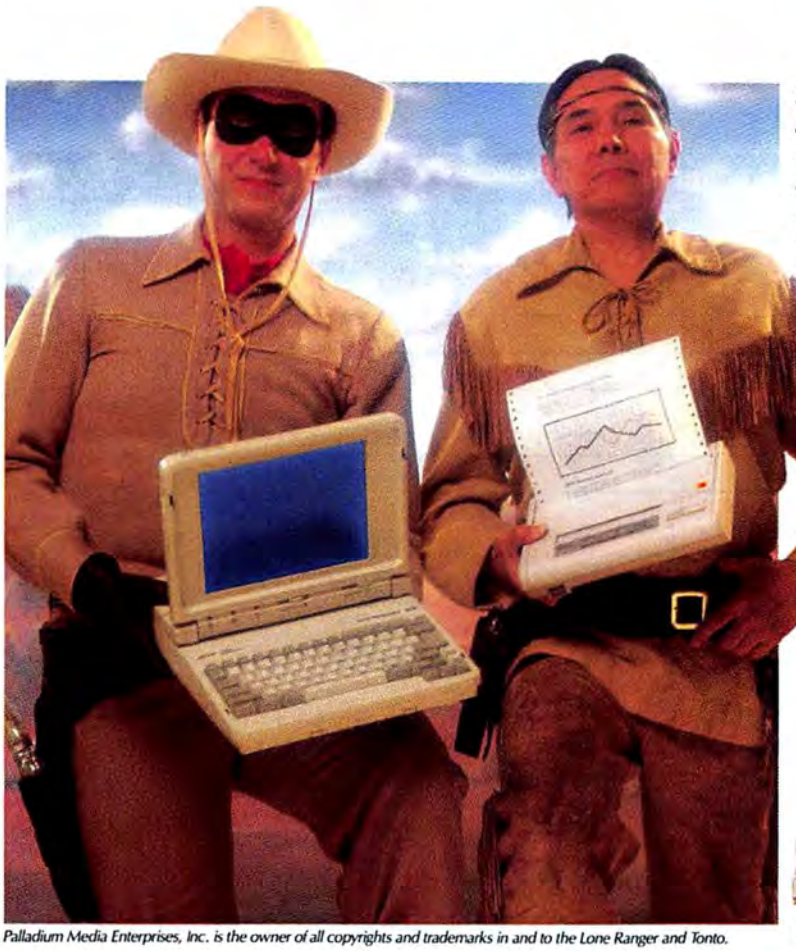
Table 1: Features of Workgroup Printers

	Apple LaserWriter IINT ††	Apple LaserWriter IINTX ††††	Dataproducts LZR1260i ††††½	Dataproducts LZR1260ess ††††½	GCC BLP IIS ††††
List price	$3,999	$4,999	$4,995	$5,995	$2,899
Street price	$2,799	$3,399	$3,200	$4,000	$2,599
Pros	Upgradable to IINTX or to Xänte board.	SCSI port. Good speed.	Heavy-duty. Good paper handling.	Heavy-duty. Good paper handling.	Good performance for price. SCSI port.
Cons	Slowest printer.		No SCSI port.	Bulky.	Slow processor.
Specifications					
Printer language	PostScript	PostScript	PostScript	PostScript	PostScript
Engine, type	Canon, laser	Canon, laser	Toshiba, laser	Toshiba, laser	Okidata, LED
Engine life (pages)	300,000	300,000	unavailable	unavailable	300,000
Monthly duty cycle (pages)	5,000	5,000	25,000	25,000	3,000
Pages per minute	8 ppm	8 ppm	12 ppm	12 ppm	8 ppm
Microprocessor, clock speed	Motorola 68000, 12 MHz	Motorola 68020, 16.67 MHz	Motorola 68020, 16.67 MHz	Motorola 68020, 16.67 MHz	Motorola 68000, 16.67 MHz
Resolution (standard, enhanced)	300 dpi	300 dpi	300 dpi	300 dpi	300 dpi
RAM (standard, max.; upgrades)	2 MB	2 MB, 12 MB; 1 MB, $299; 4 MB, $999	4 MB	4 MB	2 MB, 4 MB; 2 MB, $299
Hard drive	none	third party	none	20 MB (bundled)	third party
Network interfaces	serial, LocalTalk	serial, LocalTalk	serial, parallel, LocalTalk	serial, parallel, LocalTalk	LocalTalk*
Printer emulations	Diablo 630, PCL3	Diablo 630, PCL3	PCL3	PCL3	Diablo 630; PCL4, $149*
No. of fonts in ROM, type	35, Adobe	35, Adobe	35, Adobe	35, Adobe	35, Adobe
No. of trays, page capacity	1, 200	1, 200	1, 250	1, 250	1, 200
Paper sizes	letter, legal, A4, B5	letter, legal, A4, B5	letter, legal, A4, B5	letter, legal, A4, B5	letter, legal, A4, B5
Optional envelope tray (capacity, price)	15, $89	15, $89	100, $1,095	100, $1,095	50, $89
Other features/options	IINTX upgrade, $1,000	NA	multicassette feeder, $845; universal paper cassette, $99	multicassette feeder, $845; universal paper cassette, $99	optional paper trays — A4, B5, legal, $89 each
Replacement supplies					
OPC (drum)/copies	NA	NA	$326/25,000	$326/25,000	$289/15,000
Toner/copies	$129/4,000	$129/4,000	$31/5,000	$31/5,000	$33/2,500
Developer/copies	NA	NA	$238/40,000	$238/40,000	NA
Other					
Dimensions (W x D x H, in.)	20 x 19 x 9	20 x 19 x 9	19 x 19 x 13	20 x 20 x 19	18 x 18 x 5
Weight	45 lb	45 lb	85 lb	printer, 85 lb; processor unit, 22 lb	24 lb
Warranty	1 year	1 year	1 year	1 year	1 year
Company	Apple Computer, Inc. 20525 Mariani Ave. Cupertino, CA 95014 (800) 976-2333	Apple Computer, Inc. 20525 Mariani Ave. Cupertino, CA 95014 (800) 976-2333	Dataproducts Corp. 6219 De Soto Ave. Woodland Hills, CA 91365 (818) 887-8000	Dataproducts Corp. 6219 De Soto Ave. Woodland Hills, CA 91365 (818) 887-8000	GCC Technologies, Inc. 580 Winter St. Waltham, MA 02154 (800) 422-7777

*The $149 PC Emulation Kit comes with serial and parallel ports and PCL4 emulation.

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Table 1: Features of Workgroup Printers, continued

	Kyocera Q-8010 ¢¢¢	Panasonic KX-P4455 ¢¢½	QMS QMS-PS 810 turbo ¢¢¢½	QMS QMS-PS 820 turbo ¢¢¢¢	QMS QMS-PS 2210 ¢¢¢¢½
List price	$6,995	$3,495	$5,495	$6,495	$9,995
Street price	$4,500	$2,000	$3,945	$4,695	$7,300
Pros	Simultaneously active ports.	Inexpensive.	Good speed. SCSI port.	Good speed. Two paper trays.	Fastest engine. Prints on B-sized paper.
Cons		Slow.		Expensive.	Expensive.
Specifications					
Printer language	PostScript clone	PostScript	PostScript	PostScript	PostScript
Engine, type	Kyocera, laser	Panasonic, laser	Canon, laser	Canon, laser	Canon, laser
Engine life (pages)	unavailable	300,000	300,000	600,000	1,200,000
Monthly duty cycle (pages)	10,000	20,000	5,000	10,000	20,000
Pages per minute	10 ppm	11 ppm	8 ppm	8 ppm	22 ppm (letter), 11 ppm (ledger)
Microprocessor, clock speed	Motorola 68020, 12 MHz	Motorola 68000, 16 MHz	Motorola 68020, 20 MHz	Motorola 68020, 20 MHz	Motorola 68020, 16.67 MHz
Resolution (standard, enhanced)	300 dpi	300 dpi	300 dpi	300 dpi	300 dpi
RAM (standard,max.; upgrades)	5 MB, 6 MB; 1 MB, $520	2 MB, 4 MB; 2 MB, $699	2 MB, 8 MB; 1 MB, $595; 2 MB, $995; 4 MB, $1,495	2 MB, 8 MB; 1 MB, $595; 2 MB, $995; 4 MB, $1,495	4 MB
Hard drive	none	none	20 MB, $995; 40 MB, $1,495	20 MB, $995; 40 MB, $1,495	20 MB, $995; 40 MB, $1,495
Network interfaces	serial, parallel, LocalTalk†	serial, parallel, LocalTalk	serial, parallel, LocalTalk	serial, parallel, LocalTalk	serial, parallel, LocalTalk
Printer emulations	Diablo 630, PCL4	Diablo 630, PCL4	HP-GL, PCL4	HP-GL, PCL4	HP-GL, PCL4
No. of fonts in ROM, type	35, Bitstream Type B	39, Adobe	39, Adobe	39, Adobe	39, Adobe
No. of trays, page capacity	1, 250	2, 250 each	1, 200	2, 200 each	1, 250; 1, 100
Paper sizes	letter, legal, A4, B5	letter, legal, envelope	letter, legal, A4	letter, legal, A4	letter, legal, ledger, A3, A4
Optional envelope tray (capacity, price)	none	50, $85	50, $75	50, $75	none
Other features/options	1,000-sheet input bin, $895; font cards, $325	font cards, $145; legal-sized paper tray, $59	1,000-sheet input bin, $795; optional paper tray, $75	1,000-sheet input bin, $795; optional paper tray, $75	optional paper tray, $115
Replacement supplies					
OPC (drum)/copies	$180/10,000 sheets	$190/13,000	NA	NA	$182/12,000
Toner/copies	$37/3,000 sheets	$45/5,000	$130/4,000	$130/4,000	$75/6,000
Developer/copies	$170/50,000	$120/20,000	NA	NA	$161/30,000
Other					
Dimensions (W x D x H, in.)	17 x 18 x 13	28 x 17 x 15	18 x 25 x 9	18 x 19 x 12	20 x 21 x 13
Weight	64 lb	60 lb	44 lb	55 lb	91 lb
Warranty	90 days	1 year	1 year	1 year	90 days
Company	Kyocera Electronics, Inc. 100 Randolph Rd. Somerset, NJ 08875 (800) 323-0470	Panasonic Two Panasonic Way Secaucus, NJ 07094 (800) 742-8086	QMS, Inc. One Magnum Pass Mobile, AL 36618 (800) 523-2696	QMS, Inc. One Magnum Pass Mobile, AL 36618 (800) 523-2696	QMS, Inc. One Magnum Pass Mobile, AL 36618 (800) 523-2696

†Port switching is handled automatically.

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Table 1: Features of Workgroup Printers, continued

	Qume CrystalPrint Express ♦♦♦♦	Texas Instruments microLaser XL PS35 ♦♦♦♦½	Xänte Accel-a-Writer II ♦♦♦♦½
List price	$5,595	$4,644[§]	$2,495
Street price	$3,500	$2,975	$2,495
Pros	Fastest overall speed.	Fast engine. Inexpensive. Good performance.	Fast performance. High resolution.
Cons	Messy consumables.	Slow processor.	
Specifications			
Printer language	PostScript clone	PostScript	PostScript clone
Engine, type	Sanyo, laser	Sharp, laser	NA
Engine life (pages)	600,000	unavailable	NA
Monthly duty cycle (pages)	10,000	25,000	NA
Pages per minute	12 ppm	16 ppm	NA
Microprocessor, clock speed	Weitek XL-8200, 6 MHz	68000, 12 MHz	AMD 29000, 16 MHz
Resolution (standard, enhanced)	300 dpi, 600 x 300 dpi	300 dpi	300 dpi; 600 x 300 dpi, 1,200 x 300 dpi
RAM (standard, max.; upgrades)	3 MB, 8 MB; 1 MB, $70	1.5 MB, 4.5 MB; 1 MB, $350	6 MB, 16 MB; 2 MB, $300; 4 MB, $800
Hard drive	none	none	third party
Network interfaces	serial, parallel, LocalTalk	serial ($49), parallel, LocalTalk[§]	serial, LocalTalk
Printer emulations	PCL 4	Diablo 630, Epson 850/1050, IBM Proprinter, PCL4	PCL4
No. of fonts in ROM, type	39, Bitstream	35, Adobe	35, Bitstream
No. of trays, page capacity	2, 250 each	1, 250	NA
Paper sizes	letter, legal, A4	letter, legal, A4, B5, envelope	NA
Optional envelope tray (capacity, price)	none	70, $495	NA
Other features/options	legal, A4 paper tray, $69 each	optional paper tray, $495	NA
Replacement supplies			
OPC (drum)/copies	$327/15,000	$210/60,000	NA
Toner/copies	$108/14,000	$95/6,000	NA
Developer/copies	NA	$280/30,000	NA
Other			
Dimensions (W x D x H, in.)	17 x 18 x 13	16 x 17 x 11	NA
Weight	60 lb	55 lb	NA
Warranty	1 year	1 year	2 years
Company	Qume Corp. 500 Yosemite Dr. Milpitas, CA 95035 (800) 223-2479	Texas Instruments P.O. Box 202230 Austin, TX 78720 (800) 527-3500	Xänte Corp. P.O. Box 518 Montrose, AL 36559 (800) 926-8839

[§]List price includes $145 LocalTalk option.

Table 1 Criteria

List price — The manufacturer's suggested retail price.

Street price — An average price charged by U.S. dealers in May 1991 or the price charged by vendors that sell direct.

Printer language — The PDL (page-description language) used in the printer.

Engine, type — The manufacturer of the engine used in the printer and the type of marking technology (laser or LED).

Engine life (pages) — The manufacturer's rating of the engine life in total number of pages the unit is expected to produce.

Monthly duty cycle (pages) — The number of pages the printer can print in a month, significant for high-volume printing.

Pages per minute — The manufacturer's rating for how many pages the printer can output *after* the RIP has prepared the pages for printing.

Microprocessor, clock speed — The processor that powers the printer and the clock speed, in megahertz.

Resolution (standard, enhanced) — The number of dots per inch the printer can produce.

RAM (standard, max.; upgrades) — The amount of on-board memory the printer ships with and the most memory the printer can accommodate.

Hard drive — If a printer has a SCSI port, the manufacturer provides its own hard drive or allows you to use a third-party drive.

Network interfaces — Interfaces other than LocalTalk for connecting with IBM PCs.

Printer emulations — Popular PC printer languages for PC users.

No. of fonts in ROM, type — The number and the type of font outlines in the printer's ROM.

No. of trays, page capacity — The number of paper trays and how many sheets of paper they can hold.

Paper sizes — The sizes of paper the printer can handle.

Optional envelope tray (capacity, price) — The number of envelopes the optional envelope tray can handle and the price of the tray. "None" indicates no envelope tray; manual feed is required.

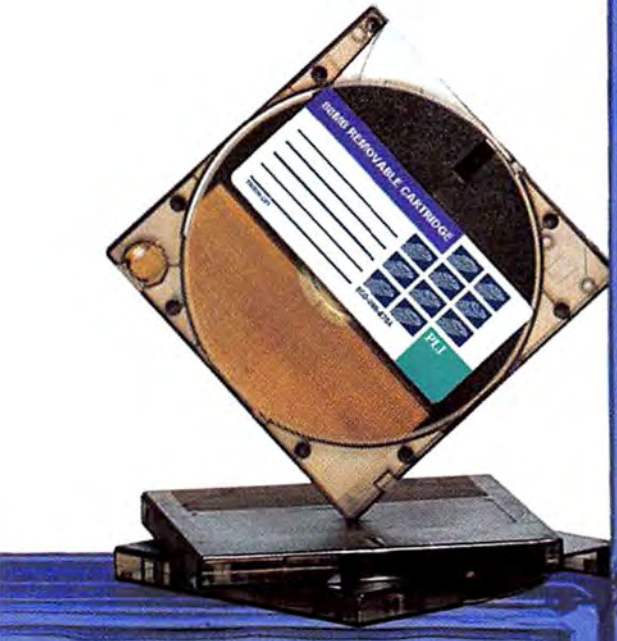
Other features/options — Any other feature or option and its price.

Replacement supplies — The price of the supply and the number of copies it can produce.

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Personal Printers

Now you can have LaserWriter output on an ImageWriter budget. If you don't need Adobe's PostScript page-description language, one of these seven personal printers will sharpen your text — and your image.

Looks like it's time to retire your ImageWriter. Sure, it's been a valued — if noisy — friend, but time has passed it by. Personal printing — one Mac, one printer — has undergone a renaissance in quality, availability, and pricing. Fueled by the introduction of

PHOTOGRAPHY: WALT DENSON



the affordable Macs, seven personal printers have appeared, offering high-quality printing for less than the cost of a Mac Classic.

MacUser Labs took its first peek at Apple's two new personal printers — the StyleWriter, a modernistic, compact inkjet printer; and the Personal LaserWriter LS, Apple's least expensive laser printer — in May '91 (see "Personal Best: Two New Apple Printers," page 90). This month we compare them with five other personal printers. Three — the Hewlett-Packard DeskWriter and two portables, the GCC WriteMove and the Kodak Diconix M150 Plus — are inkjet printers. Rounding out the pack are two laser printers from

BY JACKIE TAYLOR AND THE MACUSER LABS STAFF

GCC: the GCC PLP II and the PLP IIS, which are identical except for engine speed. The PLP IIS has an 8-ppm (page per minute) printing engine, and the PLP II achieves only 4 ppm — the same speed as the Personal LaserWriter LS.

The three laser printers can produce 300 dpi (dots per inch). That output is as good as that of laser printers costing ten times as much as the GCC PLP II. Of course, more-expensive printers are much faster — and almost all have the graphic-image-quality advantages of Adobe's PostScript page-description language — but only the best-trained eye can tell the difference between simple text printed by a personal laser printer and that printed by a high-end PostScript printer.

Among the inkjets, the Apple StyleWriter prints at 360 dpi — a higher resolution than most laser printers produce. The Hewlett-Packard DeskWriter prints at 300 dpi, and the portable GCC WriteMove and Kodak Diconix M150 Plus print at 192 dpi. The GCC WriteMove is nearly identical in appearance to the Kodak Diconix, but it has better driver software and built-in hardware compression to improve printing speed. GCC has reduced the WriteMove's price to $399, whereas Kodak asks a steep $549 for the Diconix.

Absent from the new wave of high-quality low-cost personal printers are printers that use dot-matrix technology. Dot-matrix printers — such as the venerable ImageWriter II — leave a lot to be desired in print quality, speed, and noise level. Also, Apple's $599 StyleWriter costs only $4 more than the aging ImageWriter II. All seven printers in our review produce higher-quality output; are faster; and are much quieter to live with than any dot-matrix printer, with its construction-grade noise. However, don't relegate the dot-matrix dinosaur to total extinction — using its impact-printing technology is still the only way you can print multicopy forms such as invoices and sales receipts.

In addition to speed, image quality, and ease of use, we tested each of these printers for compatibility with System 7's font technology, TrueType. TrueType renders smooth fonts at any size and resolution, both on-screen and on the printed page. The two Apple printers ship with TrueType software and fonts, and the other printer manufacturers have updated their software to be fully compatible with TrueType. Because System 7 — and TrueType — wasn't shipping when we started our testing, we tested printing speed with ATM (Adobe Type Manager), Adobe's font-scaling technology, which is similar in function to TrueType.

QuickDraw Versus PostScript

There are two types of Mac printers: PostScript printers — and PostScript-compatibles — and all the rest. PostScript printers are smart in that they contain a microprocessor and a hardware/software combination called an interpreter, which processes images for printing. Printers without this interpreter — or without an interpreter based on one of the PostScript clones — are dumb. Most of them have no microprocessor, and all of them must rely on the Mac's microprocessor and



Figure 1: The Apple StyleWriter offers a myriad of hinges, trays, and wire hangers that look high-tech but complicate the printer's setup.

Quick Drawbacks, Slow Solutions

One argument against buying a QuickDraw printer is lack of speed — printing with QuickDraw printers can take many times as long as with PostScript printers. Another knock is that the text and image quality of PostScript is lacking. There are, however, workarounds and solutions to both of these complaints.

A QuickDraw printer relies on the Mac to which it's connected to prepare a document for printing. If you have a low-end Mac such as a Classic, it can take a long time to print simple things and an amazingly long time to print a complex document. But the amount of time spent printing may not be as important to you as the amount of time your Mac is tied up figuring out how to print the page and is unavailable to do any other work. Third-party print-spooler software lets you use your Mac while it's processing a page in the background. This lets you regain control of your Mac for other work. Because the spooler interleaves these tasks, the total print time actually increases. You may also experience jerky reactions of the mouse or keyboard.

Some of the printers we tested come with spoolers: Apple's Personal LaserWriter LS works with the Apple PrintMonitor to do background printing, and the GCC WriteMove comes with QuickSpool II. None of the other printer packages include spoolers, but all except the GCC PLP printers supposedly work with third-party spoolers. The PLP II and the PLP IIS use a SCSI interface, which prevents spooling.

The other reason that some people balk at using QuickDraw printers is that they don't have PostScript built in, which can be a real drawback. You can't print from Adobe Illustrator to a QuickDraw printer, for example, and the rich graphics power of PostScript can't be used. You also can't print rotated text or text on a path — routine PostScript effects. But thanks to ATM and TrueType, text can look as good as that printed by any PostScript printer. The GCC PLP printers have optional PostScript hardware upgrades, but they're expensive.

Fortunately, PostScript functionality can be emulated in a software program, such as CAI's Freedom of Press ($498; Freedom of Press Light, $99), QMS' UltraScript ($195; UltraScript Plus, $495), or TeleTypesetting's T-Script ($145). CAI, 900 Technology Park Drive, Building 8, Billerica, MA 01821; (503) 667-8585. QMS, P.O. Box 58101, Santa Clara, CA 95052; (800) 635-3997. TeleTypesetting, 474 Commonwealth Avenue, Boston, MA 02215; (617) 734-9700.

If you buy a PostScript-emulator program, it will reside on your hard disk. When you print, the emulator takes PostScript instructions from the print driver and translates them into instructions the printer can understand. The emulator performs the same functions as do the microprocessor and code in any PostScript printer. This adds some processing time to the print job, so you'll find that your documents print more slowly than they would without the emulator. For the price, however, PostScript-emulation software is an ideal way to get PostScript abilities for a fraction of the PostScript-hardware cost.

its internal QuickDraw graphics language to perform the image processing. Because of this reliance on the Mac's graphics language, non-PostScript printers are often referred to as QuickDraw printers — a misleading term, because there's no QuickDraw in these printers. Although QuickDraw printer may be a misnomer, it's a convenient and widespread one: All the personal printers we tested for this report are often referred to as QuickDraw printers.

Every Mac PostScript printer has a LocalTalk connection. Conversely, most QuickDraw printers don't have this expensive connection — because the host Mac does all the work, it doesn't make sense to put QuickDraw printers on a network. These printers don't let you regain control of your Mac quickly, and their performance is so slow that they're impractical to share. Only the Hewlett-Packard DeskWriter can be networked, because it can use LocalTalk or serial connections. The other printers connect to your Mac through the serial port or via SCSI.

A QuickDraw printer costs much less than a PostScript printer. Most PostScript printers are priced around $5,000, but $10,000 workhorses are not uncommon. GCC recently announced a 300-dpi bargain PostScript printer — the BLP Elite — for $1,599 and other companies such as Abaton and Software and Hardware That Fits are also offering PostScript printers for less than $2,000, but these units are expensive compared with the $500 street price of a 300-dpi HP DeskWriter.

The two GCC laser printers — the PLP II and the PLP IIS — can be upgraded to PostScript models. The PLP II can be upgraded with a board swap for the difference in cost to the BLP Elite or, for a little more money, to the BLP II. The PLP IIS can also be upgraded to the PostScript BLP IIS. This is a nice option if your personal Mac is pressed into duty in a network of two or more Macs or if you need PostScript graphics capabilities. The other QuickDraw printers can use inexpensive third-party PostScript-emulation software packages that run on the Mac (see the "Quick Drawbacks, Slow Solutions" sidebar).

Setting Up

Besides being easy on your wallet, personal QuickDraw printers are also easy to set up: Should you stumble, the manuals can help you. The Kodak Diconix, for example, comes with an especially useful instruction sheet — called Quick Card — in the front of the manual. It has detailed illustrations for each step, so you probably won't need to read further. The GCC WriteMove's manual isn't as thorough as the Diconix's, but setup is equally easy. The HP DeskWriter is also very easy to set up.

The StyleWriter, on the other hand, has several latches and foldout parts that make setup confusing (see Figure 1). Although the flipping, sliding, and folding can be fun — it's kind of like playing with a "transformer" toy — you can't be quite sure if everything is in place. It's possible to install the ink cartridge improperly, for example, which results in a paper jam or a dialog box telling you that the printer is out of paper while you're printing. Simply removing and reinstalling the ink cartridge fixes this problem.

For the laser printers, the toughest

How It Works: Inkjet and Laser Engines

The QuickDraw printers in this report use two types of printing technologies: inkjet or laser. Laser output is generally of higher quality than inkjet output, even in cases where an inkjet has higher resolution. Ink tends to spread on paper, and if a page contains large areas of solid black, the paper can get wet during printing. Laser printers use small particles of toner that produce finer text and rich black graphics.



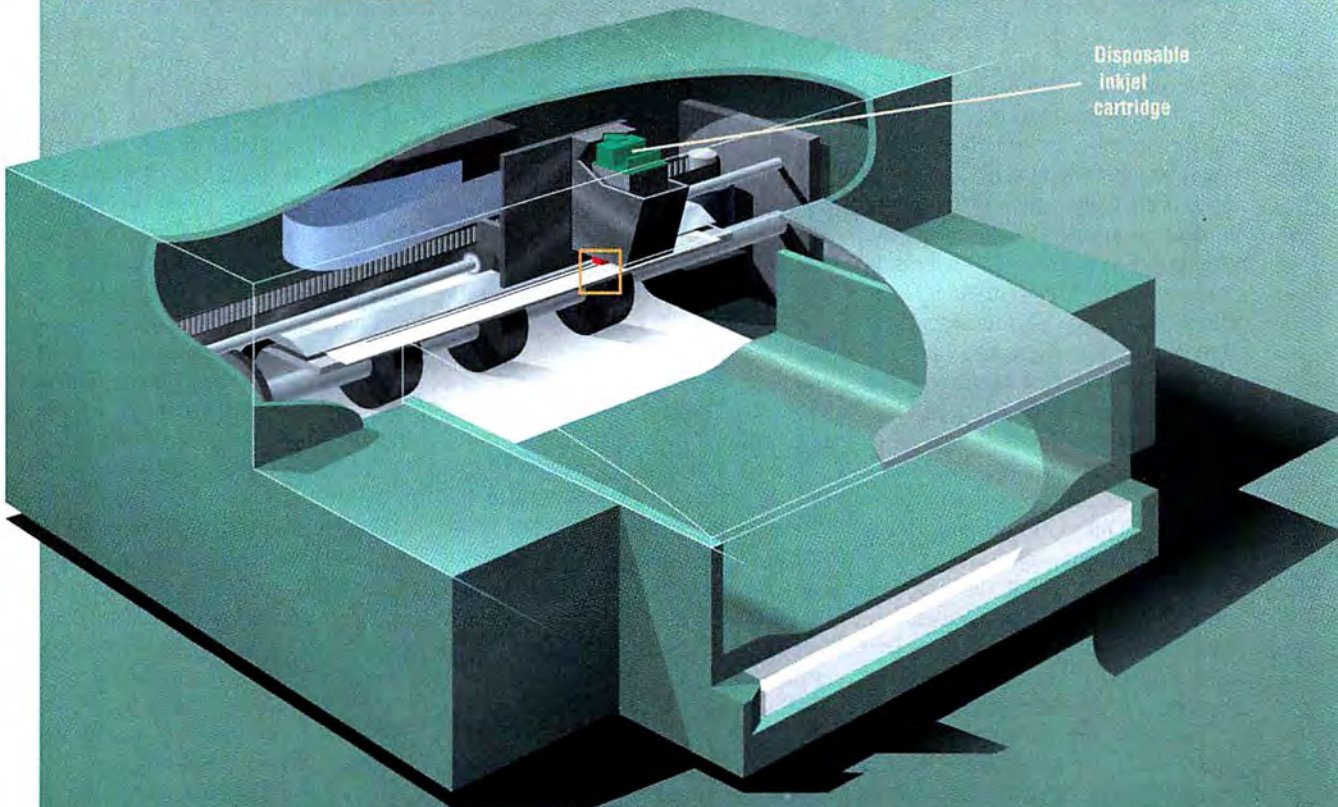
An electric heating element behind the nozzle opening is activated, and it heats up.



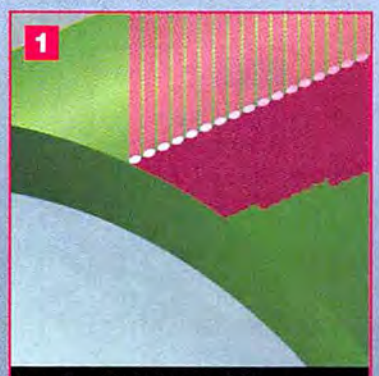
The ink in front of the heating element begins to vaporize and expand.



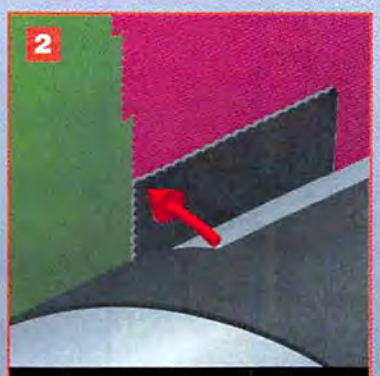
The ink vaporization increases the pressure in the nozzle, forcing the ink to shoot onto the paper.



The four inkjet printers in this report — the Apple StyleWriter, GCC WriteMove, Hewlett-Packard DeskWriter, and Kodak Diconix M150 Plus — use heat to vaporize ink onto a page. The ink and print head are integrated into a disposable cartridge that has many inkjet nozzles.



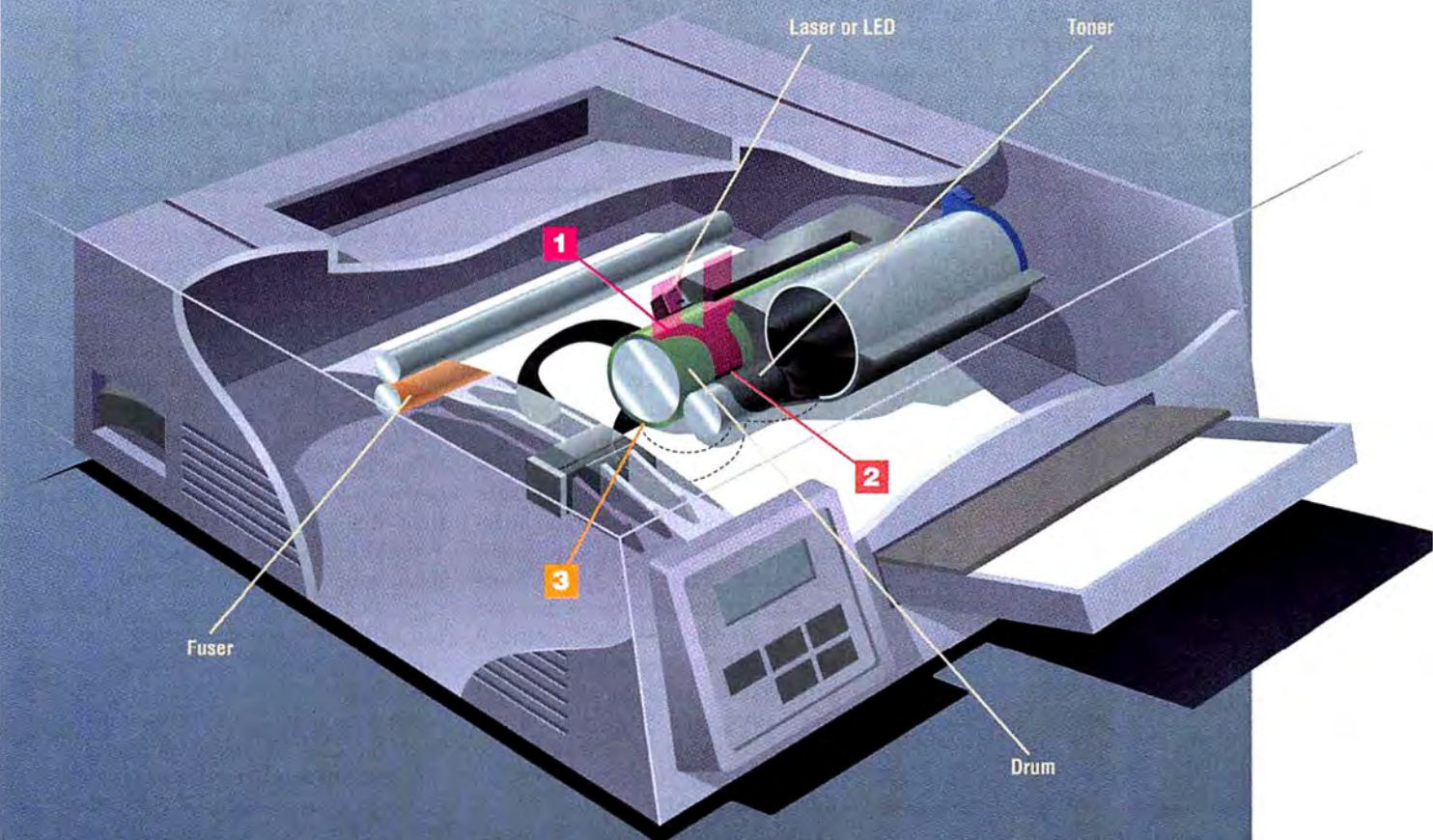
A series of light beams strikes a negatively charged drum, creating areas of positive charge.



Negatively charged toner transfers onto the areas where the light has drawn an image.



Positively charged paper is passed through the roller, attracting the toner from the drum. The paper then passes between heated rollers that fuse the toner onto the page.



The three laser printers — the Apple Personal LaserWriter LS, GCC PLP II, and GCC PLP IIS — use tiny black-plastic toner particles to create images on a page. There are four essential elements in a laser engine: a photosensitive drum, a light beam from either a single laser or an array of LEDs, toner, and a fuser.

setup is installing the *consumables* — the toner, the drum, and the fuser. It's easy to change the Personal LaserWriter LS' single toner/drum unit, but the same can't be said for the GCC PLPs, whose two-part toner-and-drum set requires more installation steps. All the inkjets have fairly simple setup. The WriteMove and the Diconix cartridges, however, require priming, which can leave ink all over your hands if you're too vigorous.

Ink and toner refills or replacements start at $8, depending on the printer type and how much ink or toner coverage your average page requires. Don't let these numbers fool you, however — the cost per page (see Figure 2 and Tables 1 and 2) is what you really need to check.

Although initially it may seem that consumables for laser printers are more expensive than those for inkjet printers — the GCC PLP toner refills cost $33, and the drum replacements are $289, for example — using a laser printer actually costs less per page, because each toner cartridge lasts for thousands of pages. Inkjet-cartridge replacements have less intimidating prices, but they don't last as long, so you'll change cartridges more often and pay more per page.

Figure 2: Cost per Page

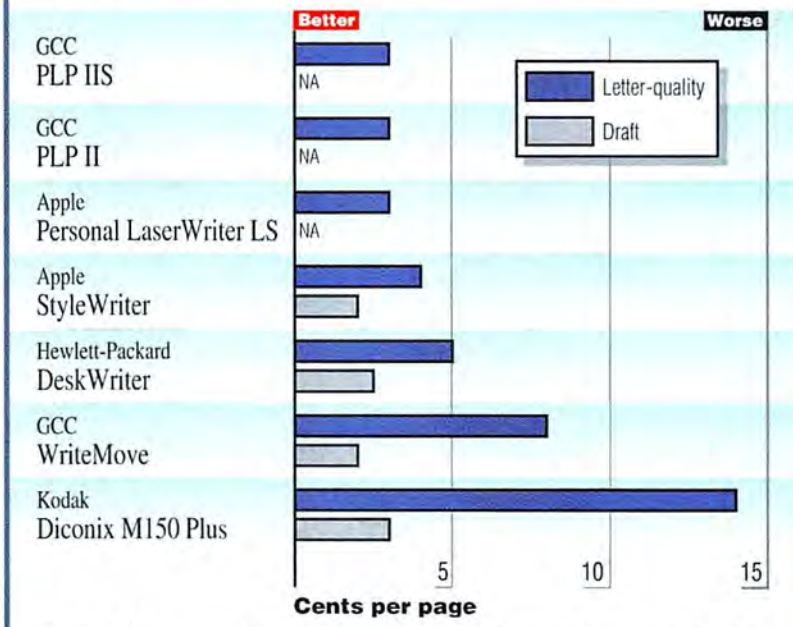


Figure 2: A laser printer's toner and drum lasts much longer than an inkjet printer's cartridge does. Despite the higher initial cost of consumables, a page produced by a laser printer costs less than a page produced by an inkjet printer.



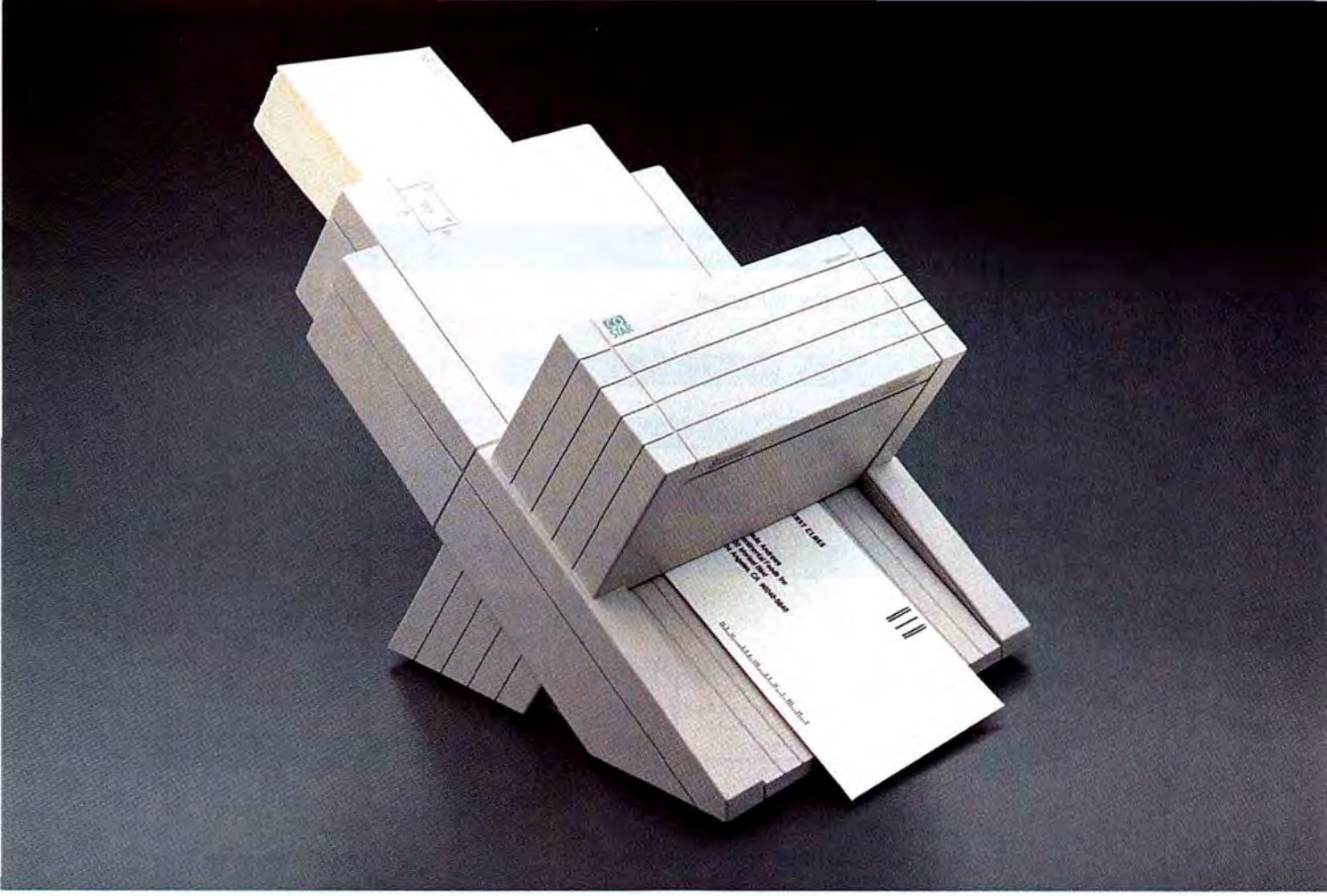
Figure 3: The clever design of the GCC WriteMove and the Kodak Diconix M150 Plus printers makes them truly portable: Their rechargeable batteries are in the platen, so no space is wasted.

You may also be concerned about the amount of plastic these cartridges are adding to your local landfill. Inkjet cartridges, although small and unobtrusive, have to be replaced more frequently than do the larger laser-printer cartridges. Inkjet cartridges are not reusable, unlike the Apple Personal LaserWriter LS cartridge, which can be refilled. The GCC PLP cartridge isn't as environmentally sound: It can't be refilled. Laser or inkjet, both will eventually make you throw away roughly the same amount of plastic (unless you refill your LaserWriter LS cartridge repeatedly).

After you unpack your new personal printer and fill it with ink or toner, the next consideration is where to put it on your desk. The Diconix and WriteMove are truly portables: Each is about the size of an average hardback dictionary, weighs about three pounds, and can operate on batteries that fit inside the platen — the drum around which the paper rolls (see Figure 3). The batteries can even be left in the platen to recharge as you work.

The size of the StyleWriter makes it almost portable, but it requires an AC outlet. Its footprint is actually smaller than that of the Diconix or the WriteMove, because it stands upright, but its upright orientation also makes it somewhat awkward to transport. The rest of the printers have larger footprints and are meant to occupy significant desk space.

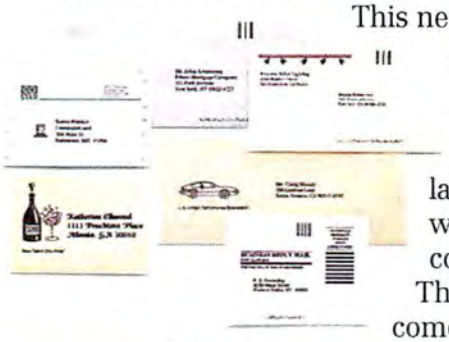
All the printers, except the GCC PLP II and PLP IIS, use serial connections and connect to the Mac's printer port or modem port. The GCC printers are SCSI devices, so you must pay attention to the standard caveats about SCSI ID and termination when you connect them. Neither GCC printer comes with a SCSI cable, so you have



Actual size: 8.7" x 8.5" x 8" (HWD)

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Figure 4: Personal-Printer Performance

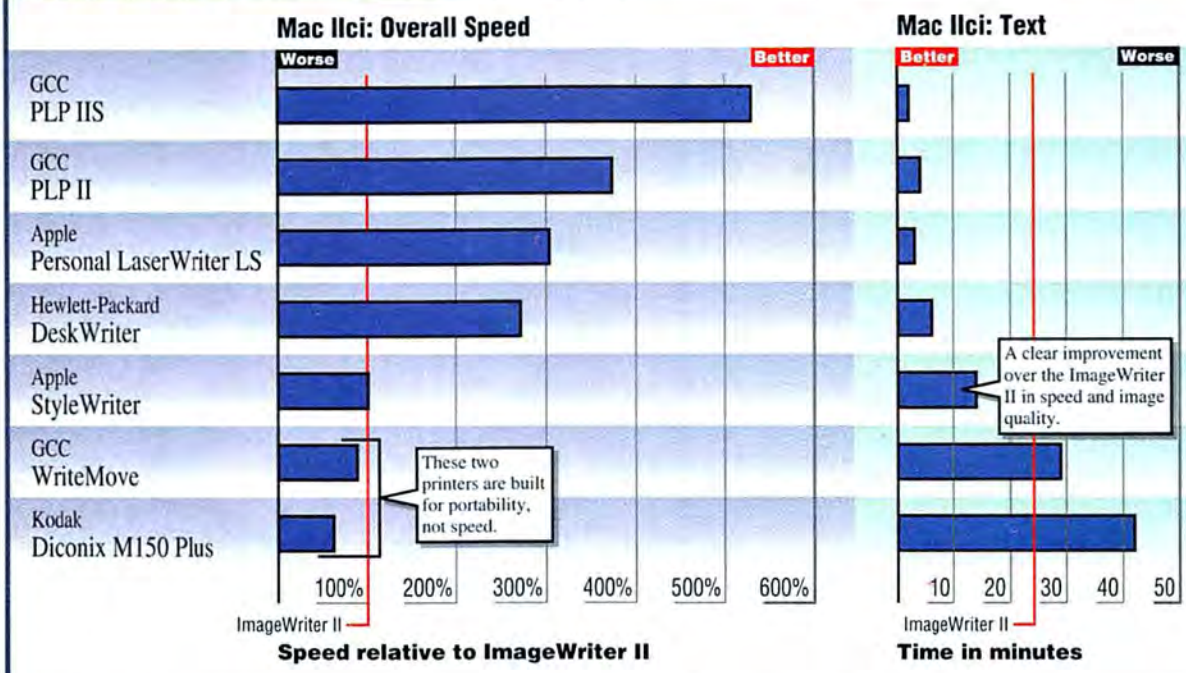


Figure 4: The speed of a personal printer — one without built-in PostScript intelligence — is determined by the speed of the Mac that's driving it. To help these printers show their best performance, we connected each one to a Mac IIci. We printed a ten-page Word document, a complex MacDraw graphic, and a one-page PageMaker layout with text and graphic elements. We compared each unit's printing times with that of the Apple ImageWriter II.

Because a low-cost printer is the perfect complement to a low-cost Mac, we also ran the ten-page Word-document test with each printer connected to a Mac Classic.

The three inkjet printers offer a Draft mode that saves time and ink but produces less-than-ideal output. To obtain the highest-quality printed images, we tested all the inkjet printers in their Best mode.

Mac IIci: Overall Speed:

The three laser printers produced output faster than did any of the inkjet printers. The GCC PLP IIS' 8-ppm engine helped it finish on top. The Hewlett-Packard DeskWriter has impressive speed for an inkjet printer — it nearly kept pace with the 4-ppm Apple Personal LaserWriter LS. Because of its slow performance on the page-layout test, the Apple StyleWriter tied its predecessor, the Apple ImageWriter II.

to supply one. The SCSI interface presents another problem: Unless you have an extra-long cable, you have to put the printer — which is not exactly small — right next to your Mac, which can be tricky if your desk space is limited. Also remember that "extra long" in SCSI parlance means only 6 feet. Another drawback of the SCSI interface is that the PLP printers can't be spooled to work in the background.

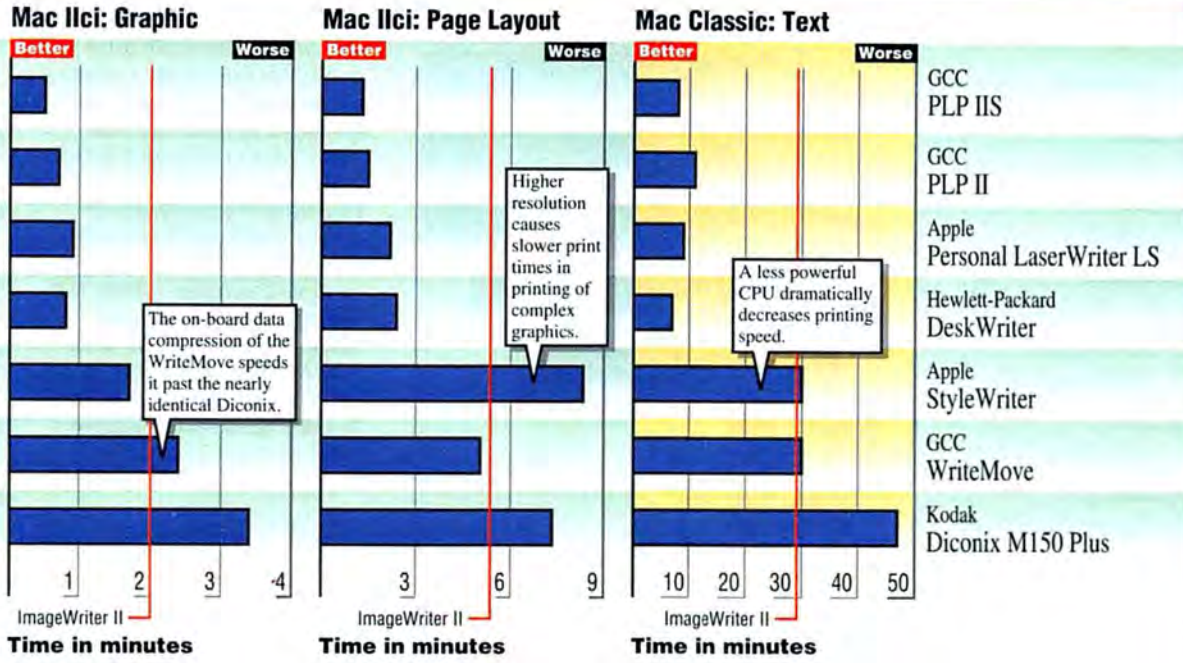
Personal printers also differ in how they handle paper. The two portables —the Diconix and the WriteMove — are designed for tractor-fed paper. You can manually feed individual sheets, but it's a little awkward to align them properly and neither can handle envelopes. The most significant paper drawback of the two portable printers is that they have a limited horizontal printing area. They can print only up to 7.2 inches, whereas a normal horizontal print area is 8 inches.

The other printers use cut-sheet paper trays and can print envelopes. The DeskWriter's tray holds 100 sheets, and both Apple printers come with trays that hold only 50 sheets each. A $199 250-sheet tray is available for the Personal LaserWriter LS, as is a $79 envelope tray. The GCC PLP II and the PLP IIS ship with a 200-sheet tray and have optional $89 50-envelope and legal-sized-paper trays. The two PLPs also have the unique ability to print from edge to edge: If you want, you can literally fill a page with graphics or text.

QuickDraw Software

After setting up your printer, you need to install software on your Mac. The printer-driver software controls the Mac's communications with the printer. All PostScript printers use the Apple LaserWriter driver. QuickDraw printers need to provide their own driver. Installing the driver is a simple matter of dragging a document into the System Folder or using an installer program.

The printers also ship with their own outline fonts, but we used ATM



Mac IIci: Text:

Engine speed is the determining factor in how quickly a personal printer can produce a text document. The Apple Personal LaserWriter LS and the GCC PLP II have the same 4-ppm engine, but the LaserWriter LS uses compression to edge out the PLP II. The GCC WriteMove also uses data compression, which let it outpace the otherwise identical Kodak Diconix M150 Plus.

Mac IIci: Graphic:

Although the two GCC laser printers continued to lead the pack, the Hewlett-Packard DeskWriter took less than a minute — slightly faster than the Apple Personal LaserWriter LS. Again, the Apple StyleWriter easily beat its venerable ancestor, the dot-matrix ImageWriter II.

Mac IIci: PageMaker Layout:

This was the most processor-intensive test. The 360-dpi Apple StyleWriter was the clear loser because the Mac has to generate more dots — thus processing more data — than the 300-dpi laser printers, the 300-dpi Hewlett-Packard DeskWriter, or the 192-dpi inkjet printers.

Mac Classic: Text:

Surprisingly, the Hewlett-Packard DeskWriter beat the other personal printers in this test — edging out the 8-ppm GCC PLP IIS.

and TrueType to test all the printers. All the printers worked with ATM and TrueType fonts. The functions of ATM and TrueType are identical — both enhance the way type is displayed on-screen and let you print high-quality type on a QuickDraw printer.

The Kodak Diconix ships with 13 fonts and ATM (which lists for $99). The GCC WriteMove doesn't ship with ATM, but it includes 5 fonts and print-spooler software. The HP DeskWriter comes with 13 fonts. Both Apple printers include TrueType and 13 TrueType fonts. The GCC PLP II and the PLP IIS include 5 and 11 fonts, respectively. In addition, the GCC PLP printers come with Print Manager and QuickEnvelope, two useful printing utilities. Print Manager lets you queue print jobs, and QuickEnvelope is a DA that simplifies printing on standard and custom-sized envelopes. QuickEnvelope also includes an address database and print-merge options.

Time Tests

Speed may not be as important as price or quality to a personal-printer shopper. Remember that the Mac model and the amount of RAM you're using influence a QuickDraw printer's performance — the more powerful the Mac or the larger the RAM, the faster the printing job. When you use a low-end Mac, processing time is a more limiting factor than it is on a faster Mac. The same is true for printing complex documents, because the Mac has to do more processing.

We used a ten-page Word document, a single-page QuickDraw graphic, and a single-page PageMaker file on a Mac IIci. The PageMaker test was the most processing-intensive — it consisted of gradient bars, fine lines, a gray-scale graphic, and text in various sizes. This was the document we used for judging text and image quality.

We also printed the ten-page Word file from a Mac Classic to gauge performance on a low-end Mac. From the Classic, the ten-page Word document took around 30 minutes to print on the

Figure 5: Image Quality

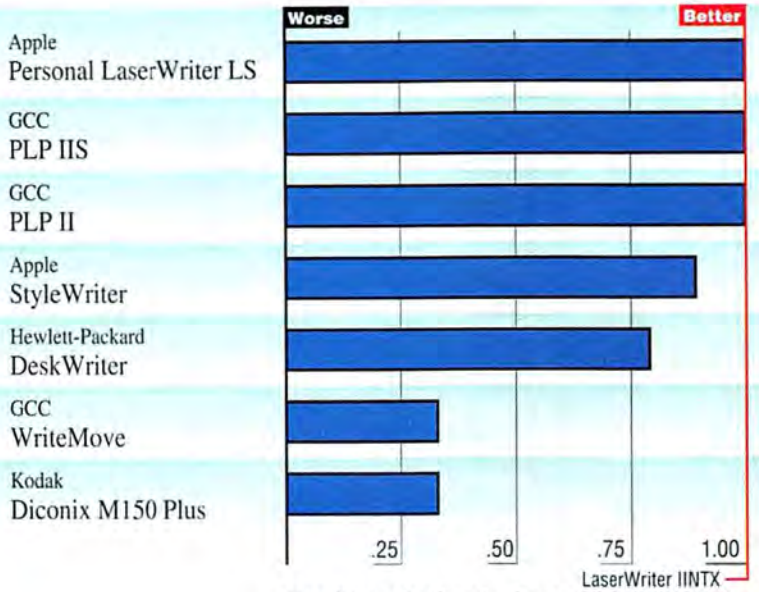


Figure 5: Low-cost personal printers differ widely in the quality of the images they produce. We assembled a panel of judges to evaluate the print quality of a complex PageMaker layout, using a test page printed by an Apple LaserWriter IINTX as the benchmark. The QuickDraw laser printers' output matched the quality of the IINTX's. The closest inkjet was the Apple StyleWriter — thanks to its 360-dpi resolution — with the Hewlett-Packard DeskWriter close behind. The output of the two 192-dpi portable inkjet printers was far from laser-quality, although it is superior to dot-matrix-quality output.



StyleWriter and on the WriteMove. It took close to 47 minutes on the Diconix (see Figure 4) — agonizingly slow performance. The HP DeskWriter, on the other hand, beat the other inkjet printers by at least a factor of 3 when printing from the Classic. Amazingly, it also outpaced all the laser printers, but only by a small margin.

When printing the Word document from the IIci, the StyleWriter's speed improved, but the WriteMove and the Diconix remained intolerably slow.

The overall fastest printer with the Mac IIci was the GCC PLP IIS, which was roughly eight times faster than the Diconix. The PLP II came in second, and Apple's Personal LaserWriter LS was a close overall third, although it edged past the PLP II in the text test. The DeskWriter threatened the laser printers' overall dominance, beating the Personal LaserWriter LS in two out of the three tests.

On average, printing with the Apple StyleWriter took more than twice as long as with the DeskWriter. The PageMaker document showed the StyleWriter's speed to molasses — it came in a dead last in that test. Its 360-dpi resolution is one reason why the StyleWriter is slow — your Mac must process a lot of dots per square inch.

The WriteMove and Diconix printers were slowest overall, but the WriteMove's superior firmware — a special compression chip — and driver software gave it a clear advantage over the Diconix.

Quick and Clean

Our final test evaluated the image quality produced by each printer. A panel of judges scrutinized output in three areas: text quality, line resolution, and gray-scale clarity. We compared each printer's version of the complex PageMaker document against that of an Apple LaserWriter IINTX, a fast network PostScript printer that has a Canon 8-ppm laser engine. For purposes of comparison, the LaserWriter IINTX output received a perfect score.

As expected, the three laser printers produced the highest overall image quality — they tied for first place (see Figure 5). The StyleWriter's output quality was close behind that of the laser printers. At 360 dpi, its resolution is better than that of any of the laser printers, and only the slight spreading of its ink kept the images from being perfect. StyleWriter output can easily be mistaken for laser output. The DeskWriter's 300-dpi output was



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significantly more grainy. Although the DeskWriter had impressive speed, the StyleWriter was the clear image-quality winner among the inkjet printers. At 192 dpi, the WriteMove and the Diconix were last in overall quality. However, they both produce much sharper, blacker output than does an Apple ImageWriter II or, for that matter, any other dot-matrix printer.

Keep in mind that the kind of paper you use can affect output quality, especially with inkjet printers. Textured paper lets the ink bleed into its fibers, causing blurry edges on text and images. Pages with heavy ink coverage can also curl slightly because of moisture. Special inkjet paper or high-quality bond paper can minimize such effects (see Figure 6).

Figure 6: Paper Concerns



Figure 6: The quality of your output depends heavily on the quality and type of paper you use. Laser printers require smooth paper, but inkjet printers need more-porous paper. Overly porous paper lets the ink spread, though. Don't use special laser-printer paper in an inkjet printer, or the ink will run.

A Personal Decision

If you're thinking about buying a personal printer, now there's a wide selection from which to choose. Whether you thirst for speed, crave quality, demand portability, or just want a quiet, inexpensive output device, there's a printer for you. Dot-matrix printers still have a place for printing low-cost color and multipart forms, but for everyday use, personal inkjet and laser printers are the wave of the present.

Jackie Taylor is a San Francisco Bay Area author who tries to output her own personal renaissance.

The Bottom Line



Our three top low-cost personal-printer picks: the Hewlett-Packard DeskWriter (top), the GCC PLP II (center), and the GCC PLP IIS (bottom).

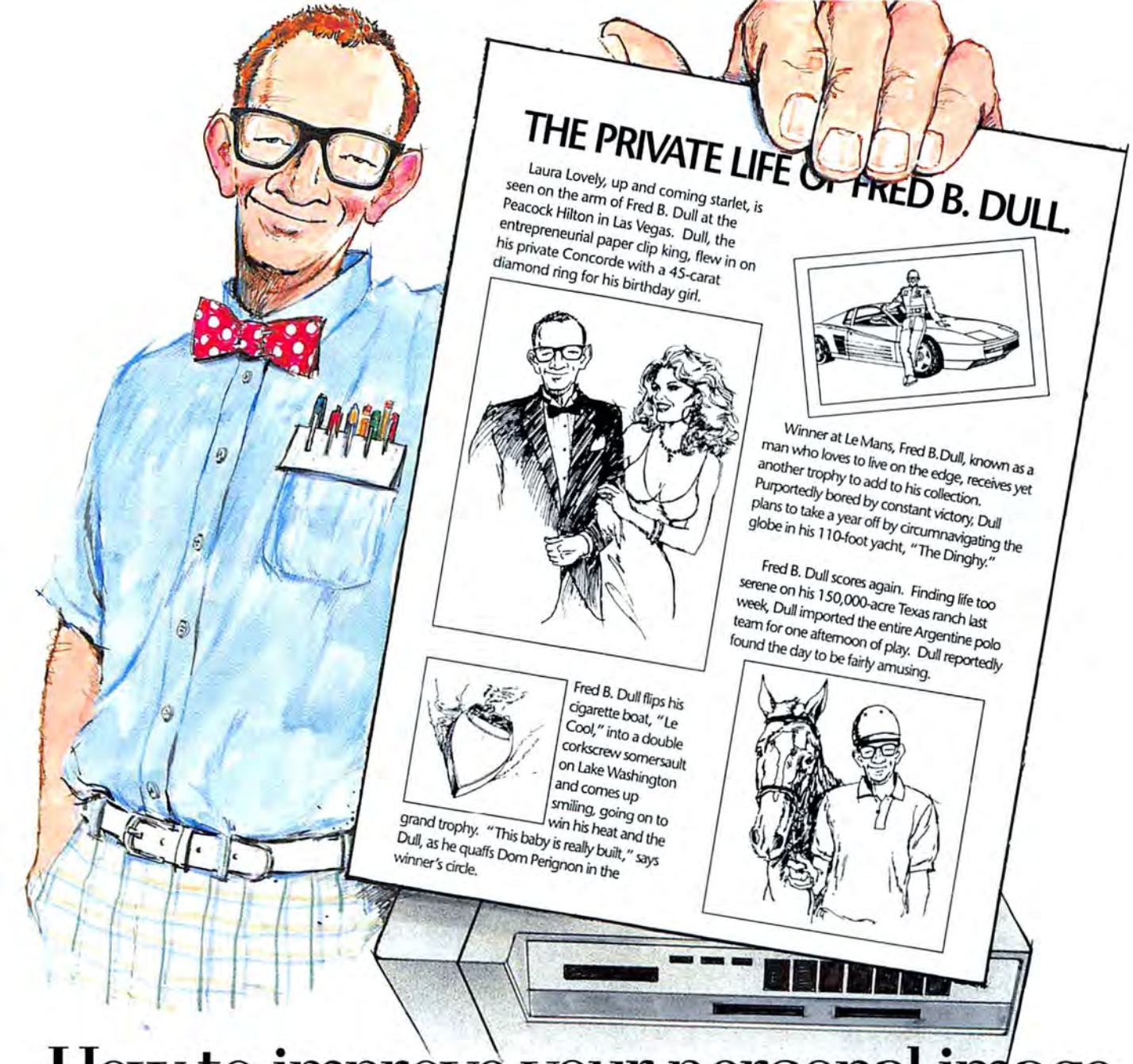
The personal-printing renaissance is led by some outstanding QuickDraw printers. Although we emphasized output quality and speed in our tests, you should also consider price — or portability, if you need a printer that can travel well. Use our picks as guidelines, and fit them to your needs.

The **GCC PLP II** ($999 list, $899 street) and the **GCC PLP IIS** ($1,499 list, $1,350 street) are our overall favorites. They ranked first and second in the speed tests: The PLP IIS has an 8-ppm engine, and the PLP II has a 4-ppm engine. If you print a lot, pick the PLP IIS, but if you're like most personal users, you'll do fine if you settle for the less costly PLP II. Output from either one of the PLPs is as good as that from a LaserWriter IINTX, and the PLP prices are much less intimidating. If you think you'll eventually want a PostScript printer, both PLP printers have optional PostScript hardware upgrades. The SCSI interface is the only drawback to these printers. Unless you have an extra-long SCSI cable (no longer than 6 feet), either printer must sit right next to your Mac.

If you own a low-end Mac — a Plus, SE, or Classic — and you have a low-end budget to match, the **Hewlett-Packard DeskWriter** ($729 list, $500 street) is your best buy. The DeskWriter gives you the most speed for your dollar and good-quality output as well. The DeskWriter beat the rest of the inkjet printers in all the speed tests by at least a factor of 2 and surpassed the laser printers' speed when printing from a Mac Classic. You can't print graphics that have many dark areas, however, or the paper may get sopping wet, but that drawback applies to all inkjet printers.

The **Apple Personal LaserWriter LS** ($1,299 list, $949 street) is a nice printer, but it was beaten solidly by both of the PLPs in the speed tests. The **Apple StyleWriter** ($599 list, $425 street) was too slow to get a solid recommendation, although it produces the closest thing to laser-quality output without costing you the extra money for a laser printer.

The **GCC WriteMove** ($399 list, $359 street) is the printer for anyone who needs portability, but we can't recommend it otherwise. Its output is fine for drafts but is barely acceptable for final output. It's also extremely slow. The WriteMove's superior driver software and included print spooler give it a significant edge over its twin, the **Kodak Diconix** ($549 list, $369 street).



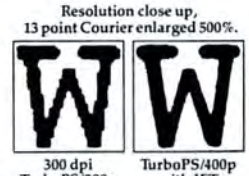
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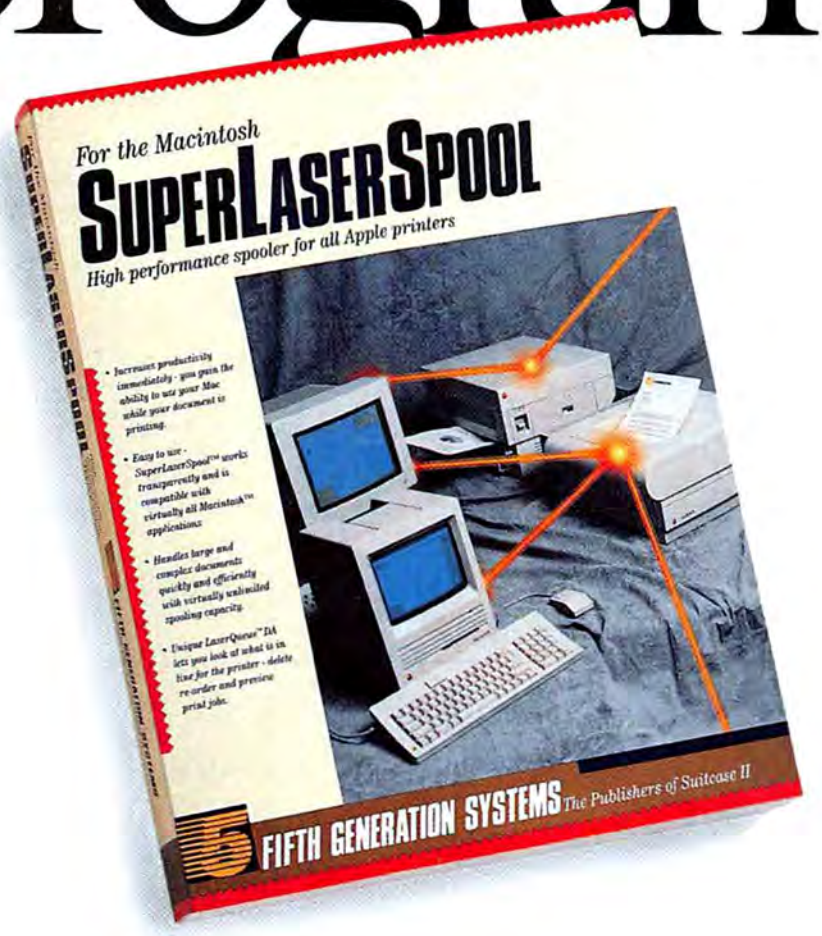
Table 1: Features of Low-Cost Inkjet Printers

	Apple StyleWriter ♦♦♦♦	GCC WriteMove ♦♦♦½	Hewlett-Packard DeskWriter ♦♦♦♦½	Kodak Diconix M150 Plus ♦♦♦
List price	$599	$399	$729	$549
Street price	$425	$359	$500	$369
Pros	High-resolution. Inexpensive. Compact design.	Compact portable design. Powered by batteries or AC.	Relatively fast performance with a Classic. Networkable. Low street price.	Compact portable design. Powered by batteries or AC.
Cons	Slow. Cumbersome to set up and use.	Slow. Poor image quality. Limited printable area.	Inkjet output inferior to laser-printers'.	Slow. Poor image quality. Limited printable area.
Specifications				
Engine, type	Canon BJ 10E, inkjet	Diconix 150S, inkjet	Hewlett-Packard, inkjet	Diconix 150S, inkjet
Engine speed (pages per min.)	.5 ppm; 1 ppm in Draft mode	less than .5 ppm	1 ppm; 2 ppm in Draft mode	less than .5 ppm
Memory (RAM)	64K	none	16K	none
Monthly duty cycle (pages)	600	not available	600	not available
Engine life (pages)	not available	not available	60,000	not available
Resolution	360 dpi	192 dpi	300 dpi	192 dpi
Interface (standard/optional)	serial	serial	serial, LocalTalk	serial
Network support	no	no	yes	no
PostScript upgrade	no	no	no	no
Software				
Outline fonts	13, TrueType	5, Bitstream	13, Agfa Compugraphic	13, Adobe
Additional software	TrueType	QuickEnvelope	none	ATM
Print spooler	third-party	QuickSpool II	third-party	third-party
Paper handling				
Paper output (image up, down)	up	up, down	up	up, down
Paper stock min./max.	16/28 lb	16/34 lb	16/24 lb	16/34 lb
Paper sizes	letter, legal, A4	letter, legal, A4, B5	letter, legal, A4	letter, legal, A4, B5
No. of trays, page capacity	1, 50	NA*	1, 100	NA*
Envelope tray (capacity, price)	none	none	none	none
Other options	none	none	none	none
Supplies				
Inkjet cartridge	$22.95/500	$8/100†	$19.95/400	$13.95/100†
Cost per page	4¢	8¢	5¢	14¢
Other				
Dimensions (W x D x H, in.)	13 x 6 x 9	11 x 7 x 2	17 x 15 x 8	11 x 7 x 2
Weight	8 lb	3 lb	14.3 lb	3 lb
Warranty	1 year	1 year	1 year	1 year
Company	Apple Computer, Inc. 20525 Mariani Ave. Cupertino, CA 95014 (800) 976-2333	GCC Technologies, Inc. 580 Winter St. Waltham, MA 02154 (800) 422-7777 (617) 890-0880	Hewlett-Packard 19310 Pruneridge Ave. Cupertino, CA 95014 (800) 752-0900	Eastman Kodak Co. 901 Elmgrove Rd. Rochester, NY 14653 (800) 255-3434

*Paper is fed either manually (single sheets) or in continuous, tractor-fed form.

†The inkjet cartridge lasts for 500 prints in Draft mode.

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Table 2: Features of Low-Cost Laser Printers

	Apple Personal LaserWriter LS ♦♦♦♦	GCC PLP II ♦♦♦♦½	GCC PLP IIS ♦♦♦♦½
List price	$1,299	$999	$1,499
Street price	$949	$899	$1,350
Pros	Easy-to-install consumables.	Upgradable to PostScript.	Fastest engine. Upgradable to PostScript.
Cons	Expensive. Slow. No PostScript upgrade.	SCSI interface prevents spooling.	Expensive. SCSI interface prevents spooling.
Specifications			
Engine, type	Canon LBP-LX, laser	Oki OL-400, LED	Oki OL-800, LED
Engine speed (pages per min.)	4 ppm	4 ppm	8 ppm
Memory (RAM)	512K	none; optional 1 MB, $139	1 MB
Monthly duty cycle (pages)	2,500	3,000	3,000
Engine life (pages)	150,000	180,000	300,000
Resolution	300 dpi	300 dpi	300 dpi
Interface (standard/optional)	serial	SCSI	SCSI
Network support	no	no	no
PostScript upgrade	no	upgrade to BLP Elite, $799; upgrade to BLP II, $1,399	upgrade to BLP IIS, $1,399
Software			
Outline fonts	13, TrueType	5, Bitstream	11, Bitstream
Additional software	TrueType	QuickEnvelope, GCC Print Manager	QuickEnvelope, GCC Print Manager
Print spooler	Apple PrintMonitor	none	none
Paper handling			
Paper output (image up, down)	up, down	up, down	up, down
Paper stock min./max.	16/28 lb	16/34 lb	16/34 lb
Paper sizes	letter, legal, A4, B5	letter, legal, A4, B5, memo	letter, legal, A4, B5, memo
No. of trays, page capacity	1, 50	1, 200	1, 200
Envelope tray (capacity, price)	15, $79*	50, $89	50, $89
Other options	250-sheet lower tray, $199†	legal, A4, B5 trays, $89	legal, A4, B5 trays, $89
Supplies			
OPC (drum)/copies	NA	$289/15,000	$289/15,000
Toner/copies	$99/3,500	$33/2,500	$33/2,500
Cost per page	3¢	3¢	3¢
Other			
Dimensions (W x D x H, in.)	15 x 18 x 8	18 x 24 x 5	18 x 24 x 5
Weight	31 lb	24 lb	24 lb
Warranty	1 year	1 year	1 year
Company	Apple Computer, Inc. 20525 Mariani Ave. Cupertino, CA 95014 (800) 976-2333	GCC Technologies, Inc. 580 Winter St. Waltham, MA 02154 (800) 422-7777 (617) 890-0880	GCC Technologies, Inc. 580 Winter St. Waltham, MA 02154 (800) 422-7777 (617) 890-0880

*Sheet feeder ($120) required for envelope-tray operation.

†Price includes required sheet feeder ($120) and letter-sized paper tray ($79).

Table 1 and 2 Criteria

List/street price — The list price is the manufacturer's suggested retail price. The street price is the average price charged by dealers around the U.S. in May 1991.

Engine, type — The name and type of the mechanism.

Memory (RAM) — The amount of on-board memory.

Monthly duty cycle (pages) — The manufacturer's recommended maximum number of pages per month.

Engine life (pages) — The rated life of the printer engine in pages.

Resolution — The resolution in dots per inch of the printer engine.

Interface (standard/optional) — The type of connection between the printer and the Mac.

Network support — Is the printer networkable?

PostScript upgrade — Can the printer be upgraded to PostScript?

Outline fonts — The number and type of outline fonts shipped with the printer.

Additional software — A list of bundled software.

Print spooler — Software that puts printing into the background, freeing the Mac for other uses.

Paper output (image up, down) — The orientation of the paper output.

Paper stock min./max. — The range of paper stock (measured in pounds) that the printer can handle.

Paper sizes — A list of paper sizes the printer can print.

No. of trays, page capacity — The number of paper trays and how many sheets of paper they can hold.

Envelope tray (capacity, price) — How many envelopes the tray, if there is one, can hold and its cost.

OPC (drum)/copies — The cost and life of replacement drums for toner-based engines.

Inkjet cartridge — The cost and life of replacement inkjet cartridges for inkjet engines.

Toner/copies — The cost and life of replacement toner cartridges for toner-based engines.

Cost per page — Average cost of a single letter-sized print, factoring the cost of consumables.

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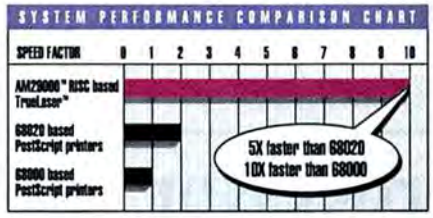


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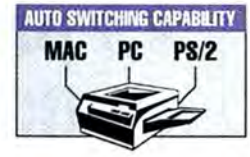
TrueLaser=TrueType.

The TrueLaser printer is the first printer to come bundled with 35 resident TrueType fonts, Apple's new font standard. TrueLaser will work with every member of your Adobe font library and beautifully publishes PostScript Type 1 and Type 3 fonts. It is also ready and waiting for both Windows 3.1 and Macintosh System 7.0.

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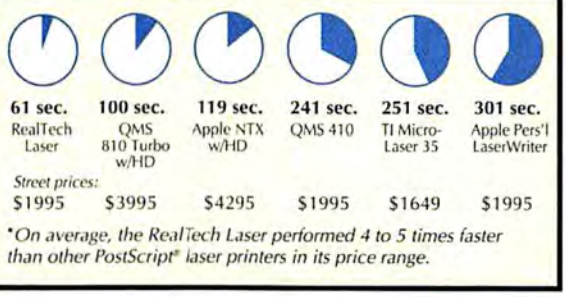
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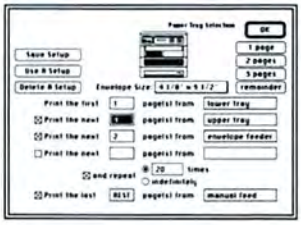
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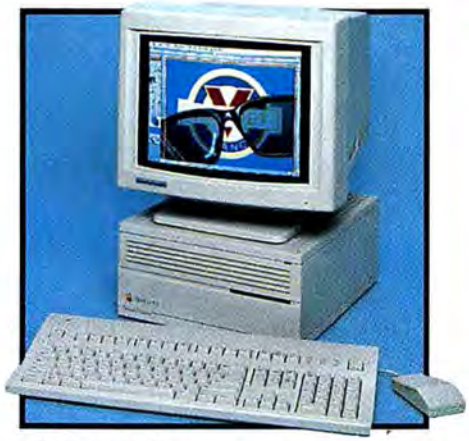
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INSTANT ETHERNET: 10BASE-T

Your dream Ethernet network may already be installed. MacUser Labs tests 29 ways to turn your existing phone wiring into a data superhighway.

BY STEPHANIE N. GLEASON, KELLI WISETH, AND THE MACUSER LABS STAFF

You're tired of LocalTalk's sluggishness. The high-speed alternative, Ethernet, is attractive, but you've heard that it requires special cabling — and you recognize "special" as a common euphemism for "complex, expensive, and difficult to manage." Despite what you've heard, don't just settle back into the slow lane. A simple, powerful, and surprisingly inexpensive alternative has finally arrived.

Last September the IEEE (Institute of Electrical and Electronic Engineers) approved a new Ethernet specification called *10BASE-T* — a network revolution with a name only an engineer could love. Ethernet networks that follow the 10BASE-T rules and use 10BASE-T-compliant hardware use the type of cabling that's often already installed for telephone service in modern office buildings — unshielded twisted-pair wiring — thus saving you the trouble and expense of installing special coaxial cable. And as we anticipated in last year's network report (see

PHOTOGRAPHY: FRED STIMSON



The Well-Connected Mac

When you enter the world of Ethernet connectivity, you're faced with a plethora of connectors, adapters, and various attachment units, many of which bear forgettable TLAs (three-letter acronyms). Here's what all the buzzwords are about:



AAUI (Apple attachment-unit interface): Last January Apple announced its own proprietary AUI, the AAUI, a key component of Apple's Ethernet Cabling System. The AAUI is a 14-pin port that many vendors are adding to their network-interface cards. You can use this port to connect your Mac to any Ethernet network via media adapters that have an AAUI connector on one side and a standard Ethernet connector on the other.

Asanté trademarked the name *FriendlyNet* for this modular attachment scheme and is now selling media adapters to connect to thick, thin, or twisted-pair cable. Alternatively, you can cover all your bases and use a multiport adapter, with connections in place for thick, thin, and twisted-pair cables. This gives you the flexibility of relocating your Macs to any Ethernet environment and the option of upgrading or changing your network-cabling scheme without worrying about hardware.



Thick, or regular, Ethernet: If your network-interface card has a *DB-15* connector, you can connect to an Ethernet network that uses thick coaxial cable. Although it has other identities in other contexts, a DB-15 connector is called an AUI (attachment-unit interface) in the connectivity world. To this AUI, you attach an external transceiver, or MAU (media-attachment unit), between the Mac and the thick Ethernet cable. Alternatively, you can connect an external transceiver for thin Ethernet cabling to the AUI, thus gaining flexibility and the potential for using other wiring schemes.



Thin Ethernet: If your network-interface card includes a *BNC* connector, the Ethernet transceiver for thinnet resides on the card and you can connect directly to a thinnet Ethernet network.



Twisted-pair Ethernet: The connection port for 10BASE-T Ethernet is an *RJ-45* port. This connector looks similar to the familiar RJ-11 connector used to connect telephones to wall jacks, but it's slightly larger.

"Are You Ready for Ethernet?" June '90, Buyer's Guide page 20), network-card vendors have followed quickly on the heels of the final IEEE specification with a barrage of Ethernet hardware for every Mac from the Classic to the IIfx.

MacUser Labs gathered 29 10BASE-T Ethernet controllers — 16 NuBus cards, 3 LC PDS (processor-direct slot) cards, 7 SE/30 PDS cards, and 3 external SCSI-adapter boxes — from 17 different manufacturers. We hauled them all into our NetWorkShop and clocked their performance on Mac IIci's, SE/30s, LCs, and Classics. In addition to timing each card's speed in real-world file-transfer tests, we also looked at ease of installation, quality of documentation, diagnostics, and any additional features such as external setting switches or LEDs.

If last year's controller prices — hovering well above the $500 mark — prevented you from plunging headlong into an Ethernet network, you'll be pleasantly surprised: This year's 10BASE-T Ethernet cards start at a modest $199. And there's more good news: Unlike the wide-ranging results we found in our tests of last year's crop of Ethernet cards (which all required thin coaxial cable, or *thinnet*), we found that all of today's 10BASE-T cards perform admirably.

But good performance, falling prices, lower cable costs (see Figure 1), and potential setup savings aren't the only reasons to make the move to Ethernet — 10BASE-T or otherwise. System 7, with its file-sharing and publish-and-subscribe features, is no doubt transforming even more Mac users from passive network residents into active network participants — and LocalTalk can't keep up with the strain.

The inevitability of bogged-down LocalTalk networks no doubt hastened the development of the Apple Ethernet Cabling System, announced this past January (see the "Well-Connected Mac" sidebar). This modular connection scheme should bring plug-and-play Ethernet to the Mac in a big way. Also, it's expected that printers will soon sport an Ethernet interface in addition to standard LocalTalk, serial, and parallel connections. In the meantime, you can connect your LocalTalk-equipped printers to your new Ethernet network with a *router*, a device that lets LocalTalk and Ethernet talk with each other. You can choose from a software router — running on the same Mac as your print-spooling

10BASE-What?

10BASE-T is not a name that was finely honed in focus groups and marketing-department conferences — blame instead the folks at IEEE (the Institute of Electrical and Electronic Engineers). Their designations (you can hardly call them *names*) for the various Ethernet specifications — 10BASE-5, 10BASE-2, and 10BASE-T — aren't as meaningless as they may sound.

In all cases, *10* describes the transmission rate of 10 megabits per second. *BASE* represents *baseband* transmission, which carries a single signal on a cable, as opposed to *broadband*, which carries multiple signals. And *5* and *2* describe the maximum distance that the signal can be carried — 500 meters for 10BASE-5 and 200 meters for 10BASE-2 (although it's really more like 185 meters, but why haggle?). And the *T* in 10BASE-T stands for *twisted* — the type of cable used in 10BASE-T networks: unshielded twisted-pair telephone-style wiring.

software, for example — or one of many hardware routers (see "Building a Better Network with EtherTalk-to-LocalTalk Routers," April '91, page 156). Alternatively, you can use Dayna's EtherPrint ($495) to connect your LocalTalk printer directly to Ethernet (see "Painless Ethernet Printing," April '91, page 217).

What's Wrong with LocalTalk?

LocalTalk's chief advantage is that you don't pay extra for it — a LocalTalk port has been built in to every Mac since the first 128K Macintosh rolled off the assembly line in 1984. But LocalTalk transmits data at only 230.4 *kilobits* (thousands of bits) per second — hardly enough oomph to transport 24-bit-color graphics files or keep up with lots of file sharing, for example. To the rescue comes Ethernet, an established network-transmission scheme and cabling standard with a speed rating of 10 *megabits* (millions of bits) per second — theoretically about 40 times faster than LocalTalk but about 5 times as fast in real-world use.

For more than 20 years, Ethernet has been the network of choice for business, government, and universities. With an Ethernet network-interface card installed in your Mac and *EtherTalk* software — driver software that enables the Mac's networking smarts, AppleTalk, to work over Ethernet cables and transceivers — you can link your Mac to an Ethernet network and gain greater connectivity with minicomputer, PC, and other business environments.

Ethernet has been steadily evolving during its 20-year career. Before 10BASE-T, the two main flavors of Ethernet were 10BASE-5 (thick coaxial cable, or *thicknet*) and 10BASE-2 (thin coaxial cable — thinnet, or *cheapernet*) (see the "10BASE-What?" sidebar). Differences among the three Ethernet schemes include the physical properties of the cable and the specifications for transmitting signals; each type has inherent advantages and limitations. For example, because of its excellent shielding and signal integrity, thick Ethernet can run distances of up to 500 meters between devices and thus is often used as the *backbone* to connect different areas of a building — artists in the penthouse design studio can send files to the Linotronic-500 in the basement — but it's the most expensive by far to install. Thinnet, on the other hand, is less expensive, but it has a run limit of about 200 meters. Cheap-and-easy 10BASE-T is limited to runs of about 100 meters.

You may hear it said that 10BASE-T Ethernet uses "regular telephone

Figure 1: Ethernet Installation Costs

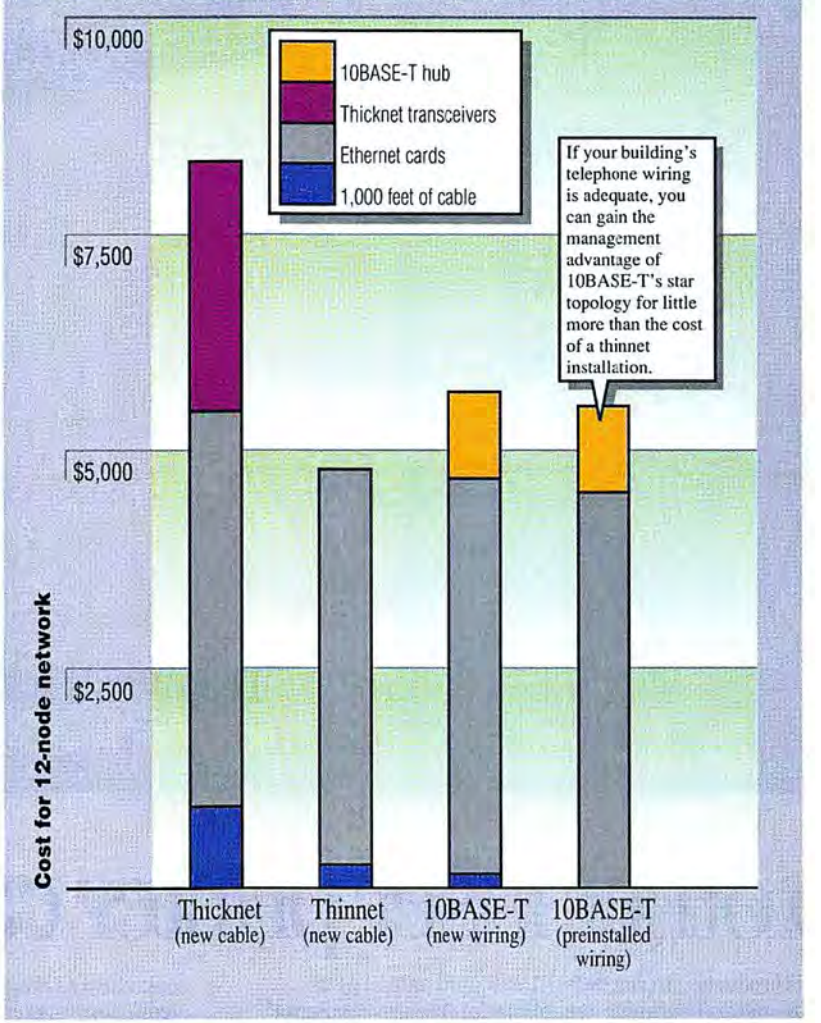
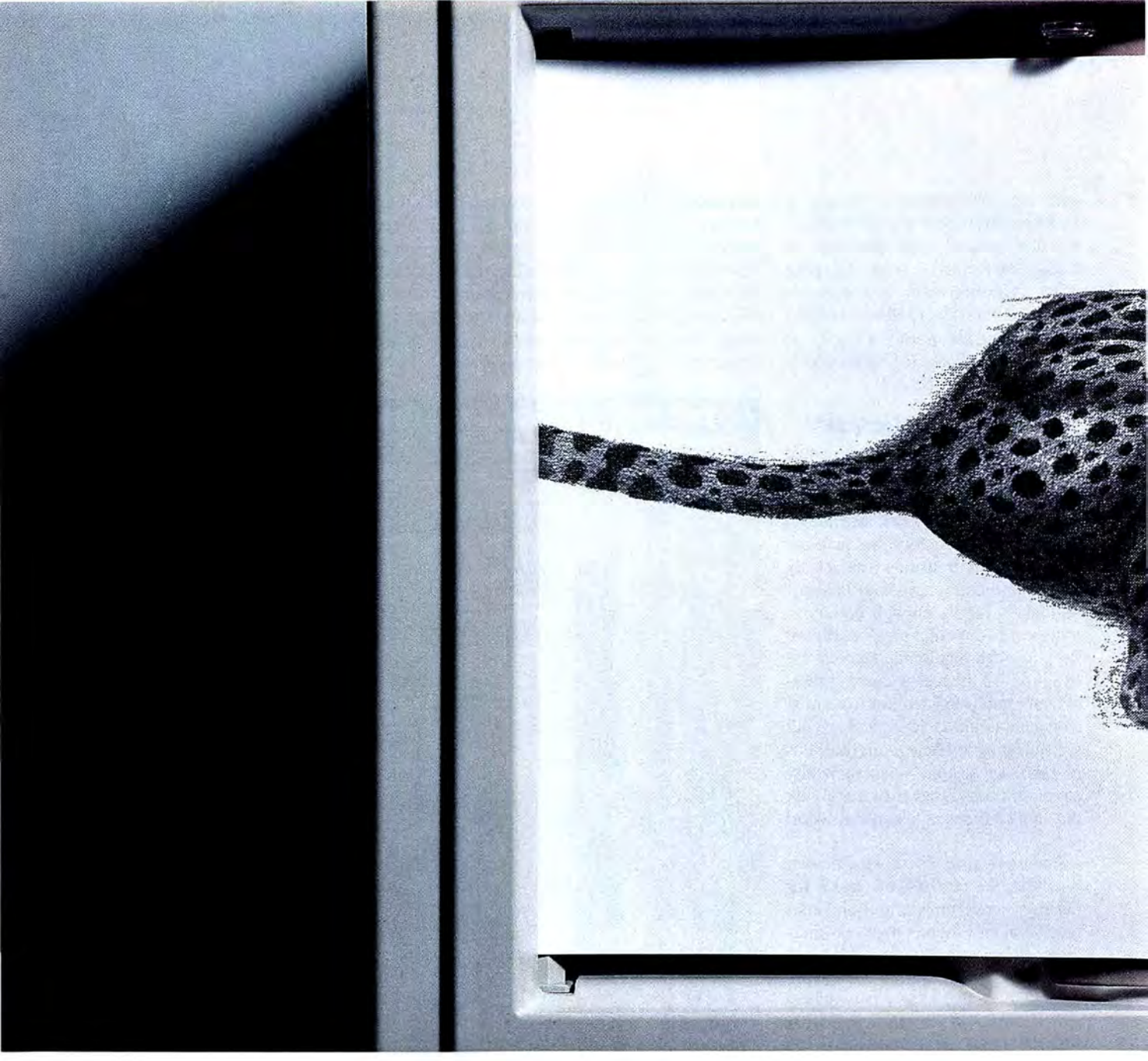


Figure 1: We estimated hardware and cable costs of a typical 12-Mac Ethernet network, using thick and thin coaxial cable and twisted-pair 10BASE-T wiring — first including 10BASE-T wiring costs and then assuming that the proper twisted-pair telephone wiring was already installed. Installation labor costs vary too widely to estimate and will depend on your specific network requirements and the physical layout of your office building. We discovered that a 10BASE-T Ethernet network won't save you a lot of money up front, because of the cost of the mandatory 10BASE-T hub. The hub, however, provides a central network-control point, which can reduce expensive and aggravating downtime. The cost of installing a star-topology LocalTalk PhoneNET system is about the same as that of a 10BASE-T installation minus the cost of the Ethernet cards.



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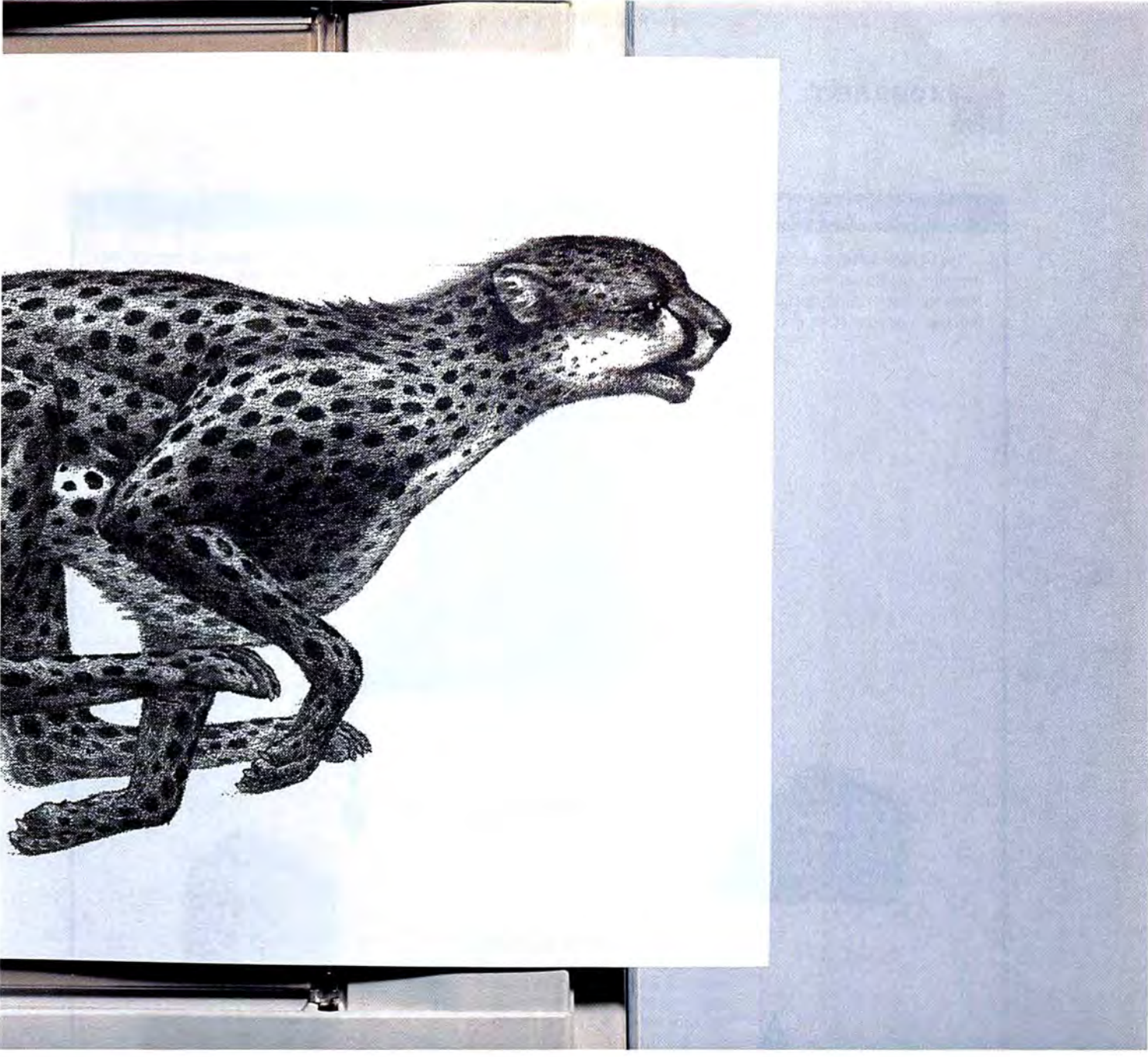
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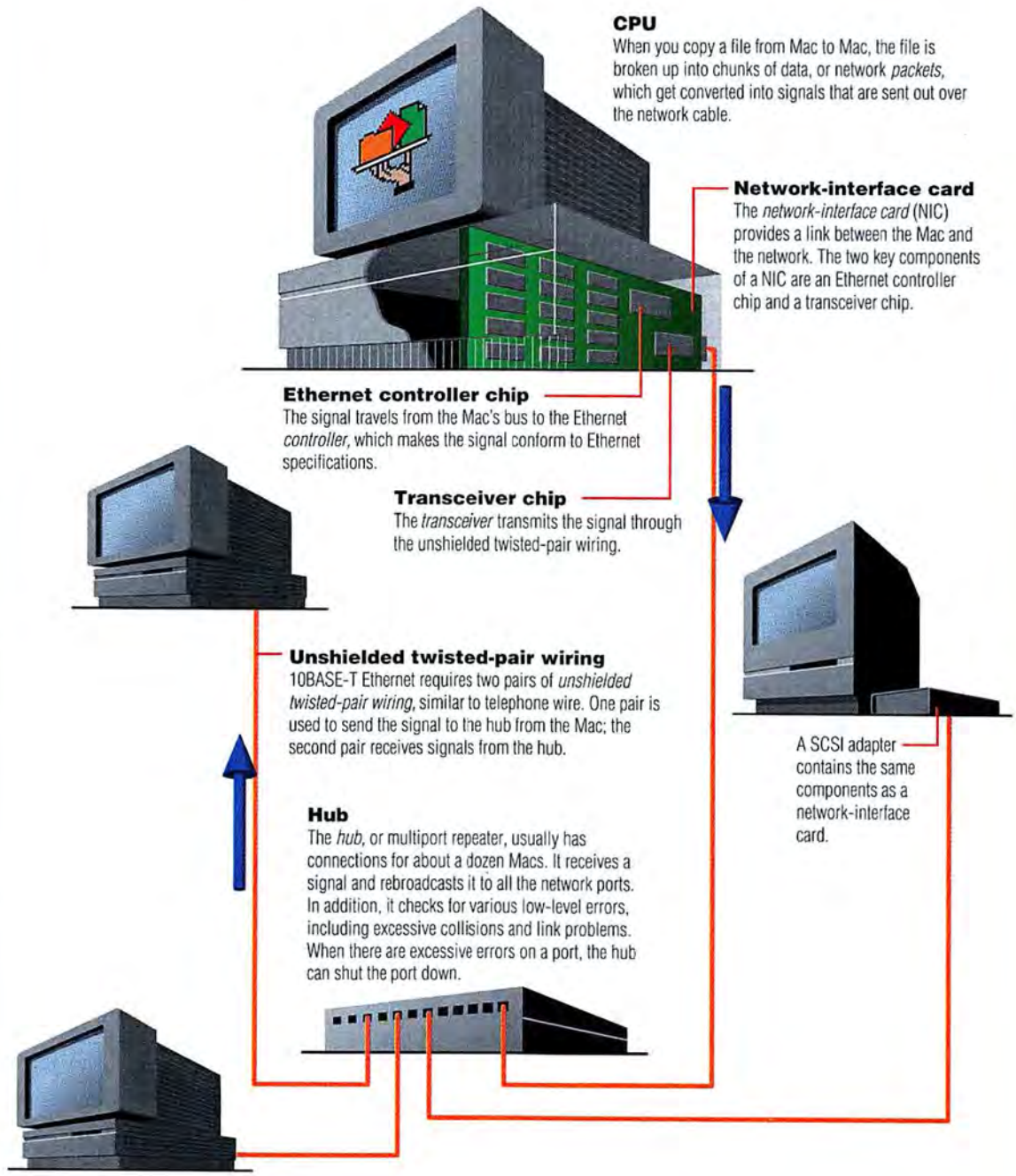
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How It Works: 10BASE-T Ethernet

The physical arrangement, or *topology*, of a 10BASE-T Ethernet network is called a star — each Mac is connected to a central *hub*, or multiport repeater. An advantage of the star topology is that the hub provides a convenient location for troubleshooting and network control. If there are problems between one Mac and the hub, only that link is affected, not the rest of the network. Not so with a *bus* topology — a daisy chain of connected Macs on a single cable; a problem with one section of the network may affect the whole network.



wire," but that's not exactly true — it depends on what you mean by "regular." If your building is cabled with unshielded twisted-pair wiring that meets the specifications of AT&T *PDS* (premises distribution system) or *DIW* (D-type, inside wiring) twisted-pair telephone cable — and most buildings built in the past few years are — you're in business. (Just ask your phone-system installer to take a gander at your wiring closet.) You'll need two unused pairs of 22- or 24-gauge solid — not stranded — copper wire; one pair sends signals, and the second receives them (see the "How It Works: 10BASE-T Ethernet" sidebar).

Make Your Network a Star

Another key difference among the three Ethernet schemes is that both thinnet and thicknet usually implement a *bus* network layout, or topology, wherein Macs are daisy-chained (see Figure 2). If you've ever had trouble with a bunch of hard-disk drives and other peripherals on your SCSI daisy chain, you're aware of the major failing of bus topology: It's hard to isolate a problem device in a chain. If one device has a problem or if the chain isn't properly terminated, the chain won't work at all.

Because of the physical characteristics of twisted-pair wiring, 10BASE-T must be configured in a *star* topology, at the center of which is a hardware *hub*, or multiport repeater, to which all Macs are directly connected. Because each Mac's connection is independent of the other Macs, problems are much easier to isolate. You also don't have to worry about termination. A star topology is vastly more reliable and manageable and promises a significant reduction in downtime, because only the ailing parts of the network are shut down when there are problems, not the entire network, as with a bus topology.

Another advantage of 10BASE-T over other types of Ethernet is that it can include many built-in self-tests that provide a greater level of reliability and troubleshooting ease. For example, some cards feature a *link-integrity* self-test, which constantly monitors the connection between the Mac and the 10BASE-T hub; status lights at the hub enable a network administrator to see at a glance if there's trouble on a particular port. Many vendors have included a link-integrity LED on their cards as a convenience — users can look at the back of their Macintosh to determine if they have a failed link, making troubleshooting a lot quicker. All the cards we tested feature link-integrity LEDs, except for the David Systems Ether-T Mac; MacProducts Magic Ethernet II/10T; National Semiconductor EtherNODE•16 NB-T and EtherNODE•32 SE/30-T; Sonic

Figure 2: Star Topology Versus Bus Topology

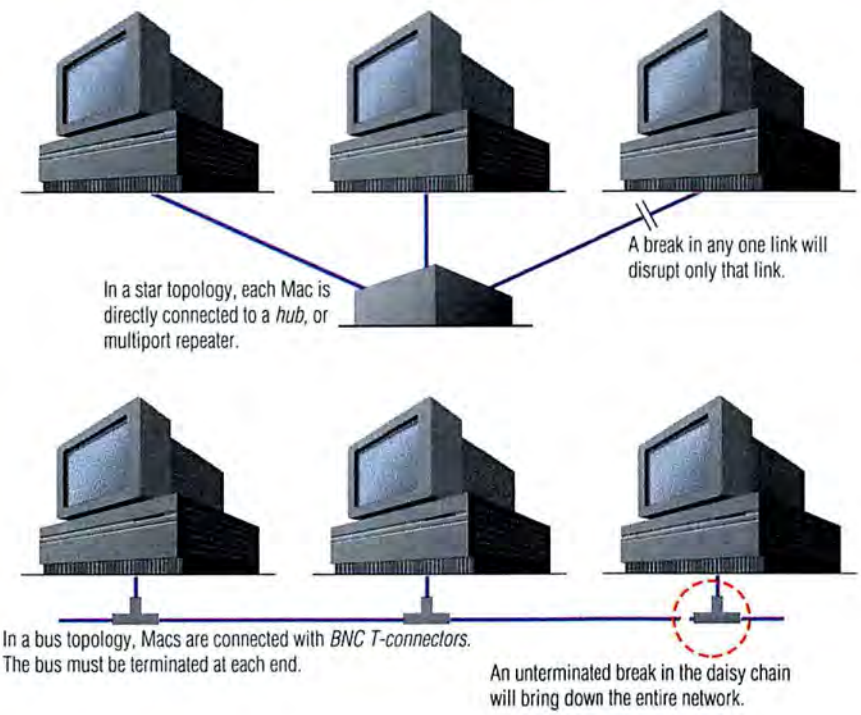


Figure 2: One significant advantage of 10BASE-T is that it requires a *star* topology, a network layout that is inherently more manageable than the *bus* topology commonly used in thick and thin Ethernet networks.

Figure 3: Network Installation

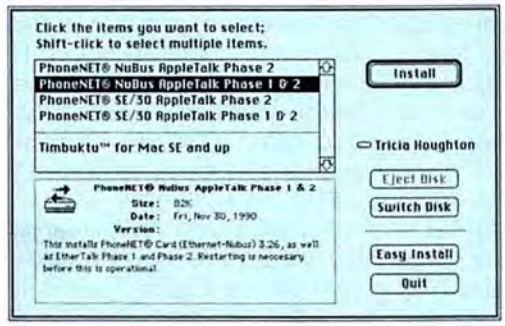


Figure 3a: Running the installation software is usually just a matter of launching it from the floppy disk provided by the vendor, double-clicking on the Installer icon, and clicking on OK once or twice. Clicking on Easy Install saves you the trouble of making any decisions.

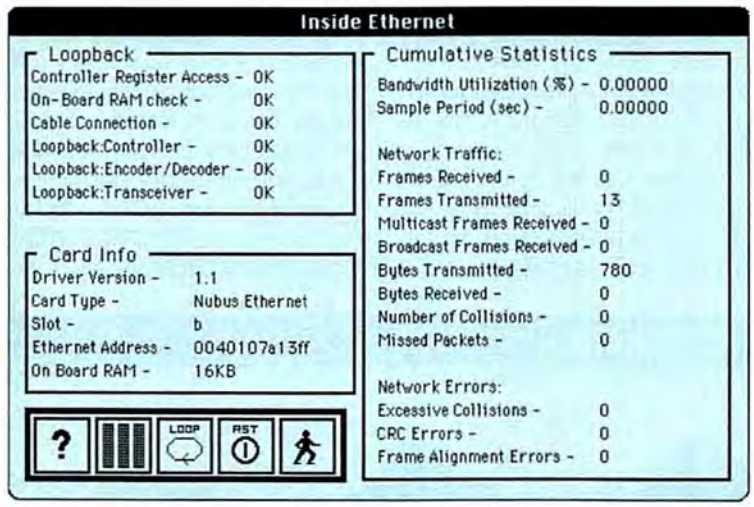


Figure 3b: After you've installed your 10BASE-T card and the EtherTalk network software, you can confirm that the hardware is functional by running a diagnostic program, if the vendor provides one.

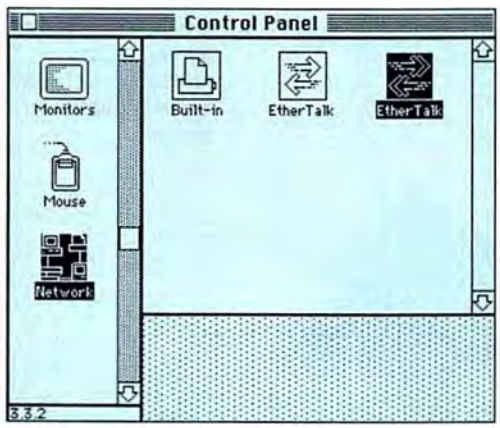


Figure 3c: You may need to switch between network drivers to use resources on different networks. To select the EtherTalk network, for example, simply pull down the Apple menu, select Control Panel, and then select Network. The Built-in icon represents your LocalTalk network; the first EtherTalk icon represents Phase 1 EtherTalk; and the second, Phase 2. You can select only one network at a time.

Figure 3: Installing your 10BASE-T Ethernet card isn't just a matter of slapping the card into a slot and plugging in the cable. The card needs software from the AppleTalk protocol stack that enables your Mac to connect to and use an EtherTalk network.

Systems Ether TwP/II, SE, and LC; and Technology Works NuBus 10T/Thin/AAUI Ethernet.

In addition to standard 10BASE-T connectors (called *RJ-45* connectors), most cards have an additional Ethernet connection port, typically an AUI (attachment-unit interface) that can be connected to an external transceiver for thick or thin Ethernet cabling. An additional port gives you greater flexibility as your network evolves. For example, you may decide to move your mail server off your departmental star hub and onto your corporate thicknet backbone.

All the cards we tested provide at least one additional port, except for the David Systems Ether-T Mac, Dayna DaynaPORT E/LC-T, LRU Systems Nodem, NRC Mac 1000TP, Racal Interlan MacConnect NIA310-10BT, and Sonic Systems Ether TwP/SE and Ether TwP/LC — these cards allow RJ-45 connection only to unshielded twisted-pair wiring. The Asanté MacCon+ LC card has a BNC connector instead of an AUI, with a transceiver on-board for thinnet.

At the high end of the connectivity scale is the Technology Works NuBus 10T/Thin/AAUI Ethernet, which gives you the most options in a single card — a BNC connector for thinnet and an AAUI (Apple attachment-unit interface) as well as the RJ-45 for twisted pair. You can connect to any type of Ethernet cable with this card.

Changing cable types can be as involved as opening your Mac and changing jumpers on the card or as simple as letting the card configure itself. The Asanté MacCon+ LC, EMAC SpeedLink/II TP and SpeedLink/SE30 TP, Farallon PhoneNET Cards (NuBus and SE/30), and Tri-Data Systems LanWay E-10T cards (NuBus and SE/30) are all auto-configuring — when you change connections, the card switches itself internally to the appropriate settings. Of the SCSI adapters, the Compatible Systems Ether+ and the Nuvotech NuvoLink SC-T both have additional AUI ports, but you must open their

cases to get at the jumper switches inside. As shipped, all 29 products are configured to use the twisted-pair-connection port, and all those that provide additional ports have adequate instructions for setting jumpers to reconfigure the card for other types of cable.

In general, the documentation for all the cards is straightforward, but National Semiconductor deserves extra credit for providing a complete tutorial about networking, including how best to set up your wiring closet. Asanté, Cabletron, Dayna, Farallon, and Shiva also get high marks for their manuals. Racal Interlan's single manual for its entire product line — including PCs — may be environmentally kind, but it's exceptionally confusing and finding the simple Mac-installation instructions is hard.

Quick Installation

Ethernet interfaces for the Mac are of two types: cards that plug in to a slot inside the Mac and external adapters that plug in to the Mac's SCSI port. Installing a NuBus card into any member of the Mac II family is a snap: Simply open your Mac, and pop the card into any available NuBus slot. The SE/30 has an internal PDS connector that accepts the card and a bracket for mounting the smaller access card that contains the 10BASE-T port (for the RJ-45). Installing the two cards in an SE/30 yourself is a hassle, however. You must carefully open the Mac with a special tool before the PDS and mounting bracket are accessible. Unless you're comfortable with the legal and electrical dangers associated with opening your SE/30 — voided warranty, threat of electrocution, fear of frying internal components — we suggest that you have an authorized dealer install the card.

Cards designed for the Mac LC also install into a PDS connector on the motherboard, but — unlike with the SE/30 — the slot is easily accessible when you open the LC's case.

If your Macs' NuBus slots or PDSs are all filled, you can still connect to Ethernet by using a SCSI adapter — an external box that plugs in to the Mac's SCSI port with a standard SCSI cable. (A SCSI adapter must share the SCSI bus with other devices, such as hard-disk drives.) The Classic is bereft of slots — processor-direct, NuBus, or otherwise — so using a SCSI adapter is the only way to connect it to an Ethernet network. Because the Mac's SCSI bus is slower than either the NuBus or the PDS, SCSI Ethernet

On the Horizon

As we were testing 10BASE-T cards, Apple announced its own unique approach to Ethernet connection: the Apple Ethernet Cabling System, with a nickname, FriendlyNet, that was quickly trademarked by Asanté. The new system — used not only by Apple but also by Asanté and Technology Works, with other vendors sure to join in — sports a new 14-pin AAUI (Apple attachment-unit interface) port. With the proper adapters, it can connect to a variety of cable types: thick coaxial, thin coaxial, and twisted-pair. And in the future, look for media adapters for fiber-optics cable.

Unfortunately, Apple didn't start shipping its cards until after we finished our testing. By the time you read this, the Apple Ethernet NB Card ($424) should be available for NuBus Macs. This powerful card will include a Motorola 68000 processor and 512K of RAM (expandable to 2.5 megabytes) and will run A/ROSE, a real-time multitasking operating system that allows network applications or multiple protocols — including AppleTalk, TCP/IP, and DECnet — to run concurrently on the card, thus freeing the main processor to perform other tasks. The new Ethernet LC Card ($199) will fit in the Mac LC. Both cards are outfitted with only an AAUI connector — it's up to you to purchase the appropriate adapter, available from Apple for $175. Expect other vendors to soon offer adapters for less. Apple Computer, 20525 Mariani Avenue, Cupertino, CA 95014; (800) 538-9696.

Cayman Systems, a leading vendor in the AppleTalk/Ethernet-gateway market, announced a complete line of Mac Ethernet cards in June, including the AAUI-equipped GatorCard E/LC-A for the Mac LC ($449). Cayman's other offerings include NuBus, IIsi, SE, and SE/30 Ethernet cards with connectors for thick and thin Ethernet or with connectors for 10BASE-T and thick Ethernet. Because of size constraints, the Mac LC cards are limited to a single port; the GatorCard E/LC-T has a 10BASE-T port, and the GatorCard E/LC has a thinnet port. Cards for the LC have an FPU socket; when it's occupied, the card is priced at $599. All other Cayman Ethernet cards are priced at $449 and come with a lifetime warranty, free telephone support, and overnight replacement. Cayman Systems, 26 Landsdowne Street, Cambridge, MA 02139; (617) 494-1999.

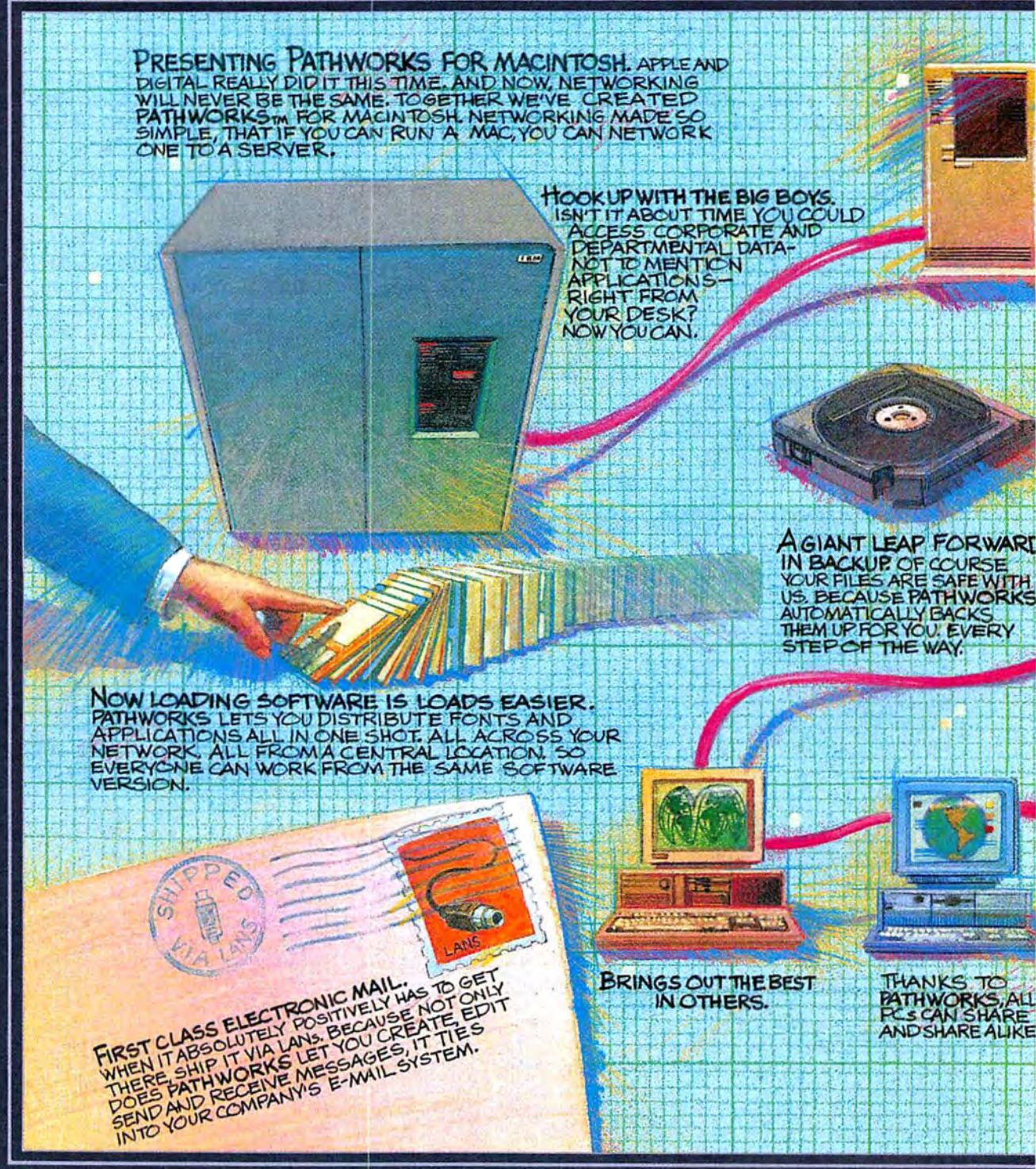
In early May, CNet Technology began shipping the CN450MACII/ET ($399), a two-in-one adapter that supports thick coaxial and unshielded twisted-pair 10BASE-T Ethernet cabling. The CN450MACII/ET — which wins our tongue-twisting-product-name-of-the-month award, is equipped with an on-board terminator, supports Novell NetWare 286 and 386 network operating systems, and is backed by a five-year warranty. CNet Technology, Inc., 2199 Zanker Road, San Jose, CA 95131; (408) 954-8000.

Because the Mac IIsi, SE/30, and LC each have only one PDS connector, multifunction Ethernet cards are beginning to appear for these popular CPUs. For example, IIsi users who want Ethernet connection as well as high-end color display would be out of luck if it weren't for solutions such as the Asanté MacCon+ 30i/Radius ($379), which when connected to the Radius Color Pivot IIsi Interface card ($795) and an Asanté daughterboard, provides an Ethernet port as well as a video port. Asanté Technologies, 404 Tasman Drive, Sunnyvale, CA 94089; (408) 752-8388.

Two additional multifunction newcomers — the Sonic Systems MagicBUS IIsi and MagicBUS SE/30 (both $299) — are PDS adapters with thinnet or twisted-pair Ethernet ports that also let you connect a second PDS board such as a color-video board, fax/modem board, or cache card. Sonic Systems, Inc., 21211 Rainbow Drive, Cupertino, CA 95014; (408) 725-1400.

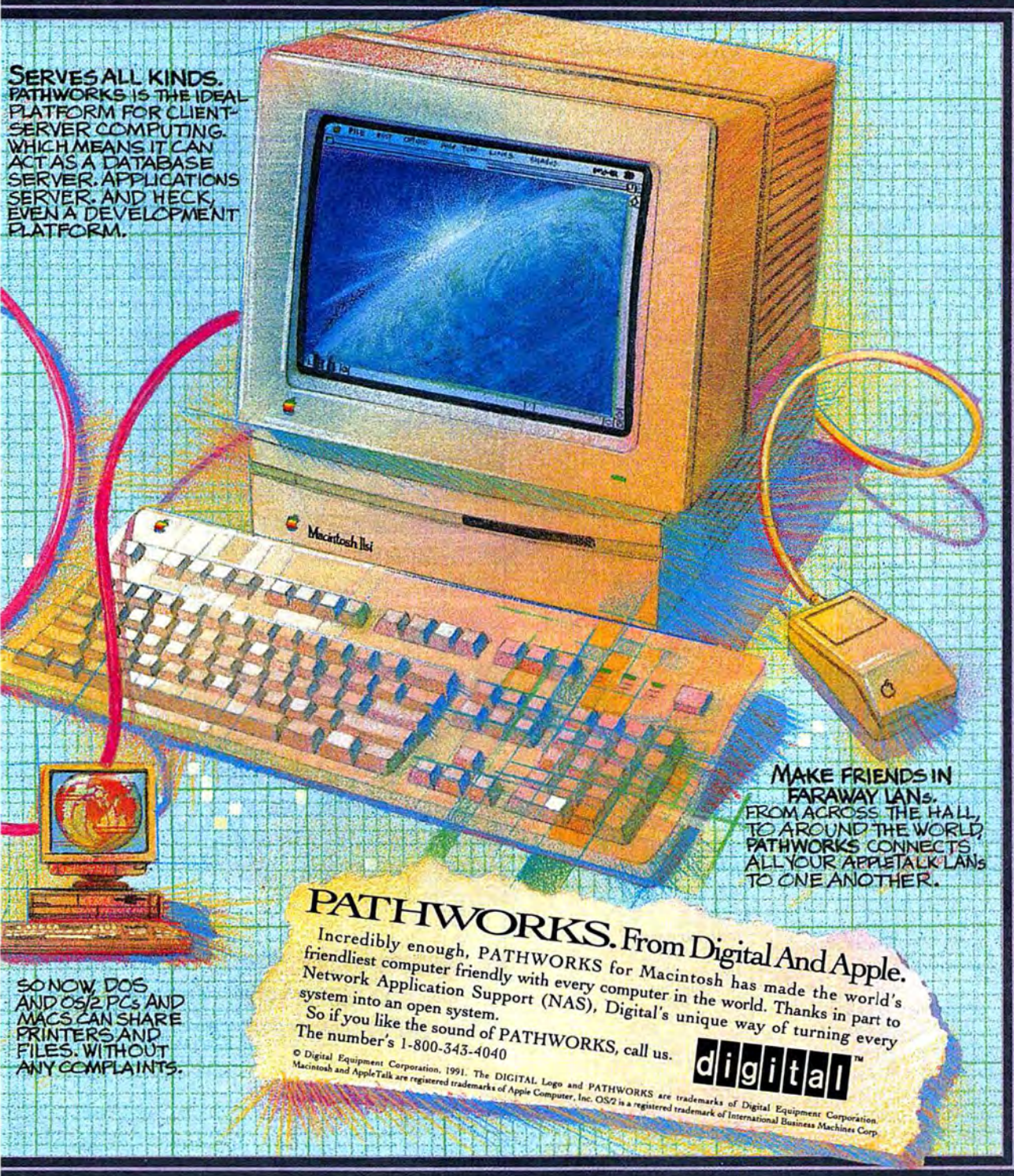
As competition heats up, expect to see more vendors dropping prices. In August, Farallon lowered the price on its PhoneNET Cards for Ethernet to $395; a ten-user pack now goes for $3,495. Timbuktu is no longer part of the package. Farallon also started shipping a card for the Mac IIsi, also $395. Farallon Computing, 2000 Powell Street, Suite 600, Emeryville, CA 94608; (415) 596-9000.

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Figure 4: File-Transfer Speed

Figure 4: To test each card's speed, we set up a two-Macintosh network, using a Farallon StarController EN, and put one of each vendors' cards in both the client and the AppleShare file server. We then timed how long it took to transfer a multifile 5-megabyte folder from the server to the client and from the client to the server. We also timed how long file transfers took over LocalTalk for each of our test platforms: Macintosh IIci's, SE/30s, LCs, and Classics.

Overall Relative Performance:

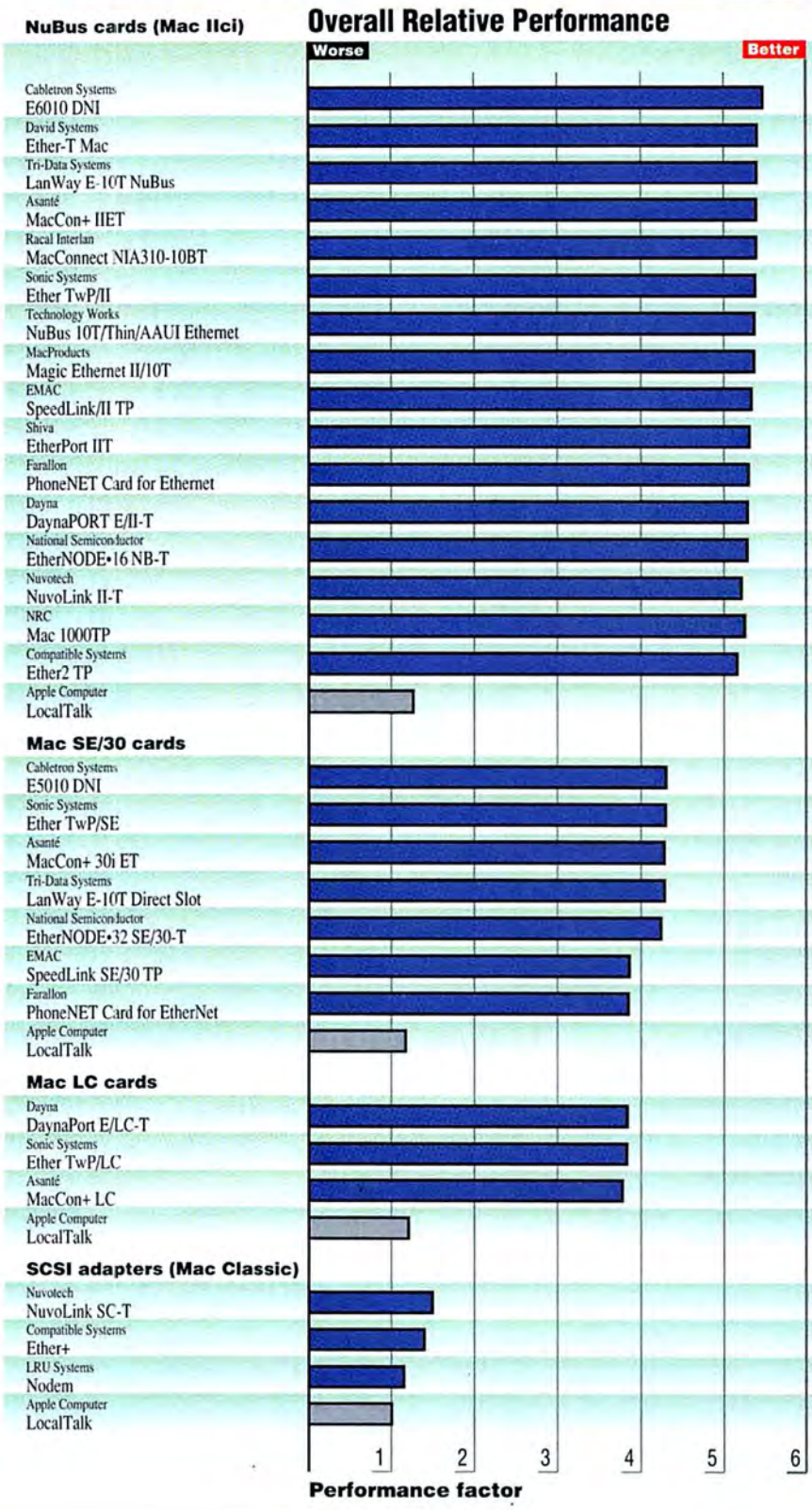
The higher up you are on the Macintosh evolutionary ladder, the more reason you have for switching to 10BASE-T Ethernet. In our real-world file transfers from the server to the client, Ethernet is about five times as fast as LocalTalk on a Mac IIci and four times as fast on an SE/30 or Mac LC. The 10BASE-T SCSI adapters, however, are forced to deal with the Classic's SCSI bus—a bottleneck that degrades performance dramatically.

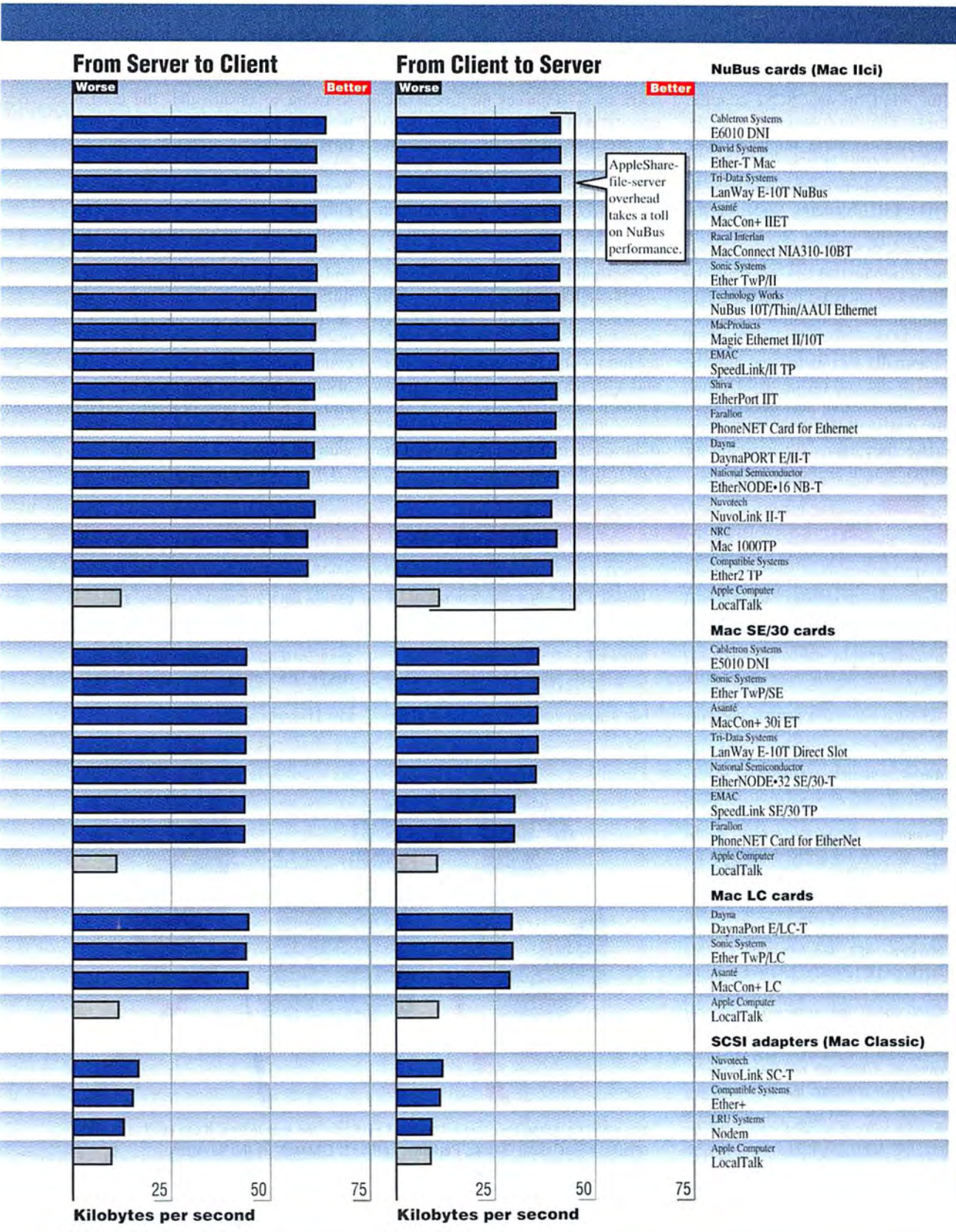
From Server to Client:

In file-transfer tests on our simple two-Mac network, the Mac IIci's 25-megahertz 68030 helped feed the data through the pipeline much faster than did the SE/30's 16-megahertz 68030 or the LC's 16-megahertz 68020.

From Client to Server:

When compared with a Mac on a network copying a file from an AppleShare file server, a server has more to do when receiving the same file from a client — it must keep track of the user's access privileges, for example. Accordingly, it takes longer to copy files from a client to an AppleShare server than from an AppleShare server to a client.




From Server to Client
Worse
Better
25
50
75
Kilobytes per second
From Client to Server
Worse
Better
AppleShare-file-server overhead takes a toll on NuBus performance.
25
50
75
Kilobytes per second
NuBus cards (Mac IIci)
Cabletron Systems
E6010 DNI
David Systems
Ether-T Mac
Tri-Data Systems
LanWay E-10T NuBus
Asanté
MacCon+ IIET
Racal Interlan
MacConnect NIA310-10BT
Sonic Systems
Ether TwP/II
Technology Works
NuBus 10T/Thin/AAUI Ethernet
MacProducts
Magic Ethernet II/10T
EMAC
SpeedLink/II TP
Shiva
EtherPort IIT
Farallon
PhoneNET Card for Ethernet
Dayna
DaynaPORT E/II-T
National Semiconductor
EtherNODE•16 NB-T
Nuvotech
NuvoLink II-T
NRC
Mac 1000TP
Compatible Systems
Ether2 TP
Apple Computer
LocalTalk
Mac SE/30 cards
Cabletron Systems
E5010 DNI
Sonic Systems
Ether TwP/SE
Asanté
MacCon+ 30i ET
Tri-Data Systems
LanWay E-10T Direct Slot
National Semiconductor
EtherNODE•32 SE/30-T
EMAC
SpeedLink SE/30 TP
Farallon
PhoneNET Card for EtherNet
Apple Computer
LocalTalk
Mac LC cards
Dayna
DaynaPort E/LC-T
Sonic Systems
Ether TwP/LC
Asanté
MacCon+ LC
Apple Computer
LocalTalk
SCSI adapters (Mac Classic)
Nuvotech
NuvoLink SC-T
Compatible Systems
Ether+
LRU Systems
Nodem
Apple Computer
LocalTalk

performance pays a penalty. Our tests show that SCSI adapters to an Ethernet network don't give you much better performance than LocalTalk.

But don't dismiss SCSI adapters entirely. They're convenient to move among machines and simple to install. All three SCSI adapters have easily accessible switches for setting the SCSI ID. The LRU Systems Nodem is the easiest to fit into your SCSI bus, with two 50-pin SCSI ports and an external terminator plug that lets you place the Nodem anywhere on the SCSI chain. Although the Compatible Systems Ether+ and Nuvotech NuvoLink SC-T are internally terminated and must be placed at the end of the SCSI chain, both offer greater networking flexibility than the LRU Systems Nodem, because they have a connector for thicknet as well as for 10BASE-T.

After you've popped the card into its slot or plugged in the SCSI adapter, you must install driver software. EtherTalk — Apple's Ethernet driver software — replaces the LocalTalk-specific part of the AppleTalk protocol to enable the Mac to communicate over Ethernet cabling while still obeying AppleTalk's rules. All vendors use Apple's System Installer to install their EtherTalk drivers into the System file and to copy other necessary files into the System Folder (see Figure 3).

Although installing the card — and the software to drive it — is a relatively straightforward task, actually establishing a connection between your Mac and a file server, for example, can be another matter entirely. If you can't log on to your file server, is it because of the card? Is it the software? Is it the cable? Is it sunspots?

Here's where diagnostic software comes into play. After installing the card and its driver software, be sure to use the manufacturer's diagnostic software to ensure that the card is working properly. Some diagnostic programs are more full-featured than others. All Cabletron and National Semiconductor cards come with sophisticated diagnostic software — for example, both include tests that check the circuitry and chip sets of the board and check the board's ability to transmit a signal. Both also let you test the communication from the board over the network — if your Mac won't connect to the network after you've installed either of these cards, you'll know if it's because of a bad chip set, a problem with the port, or a problem with the cable.

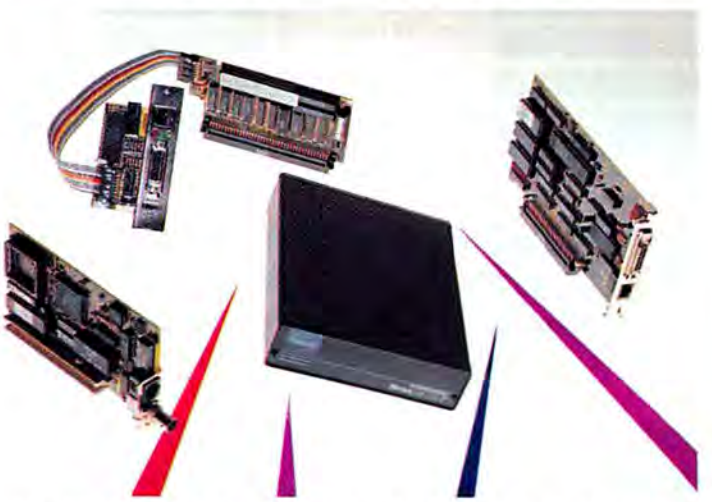
On the other hand, the diagnostic

The Bottom Line

Upgrading your network from LocalTalk to Ethernet might not be as costly or difficult as you think. The new 10BASE-T Ethernet specification is designed to work over unshielded twisted-pair wiring, which may already be installed throughout your office building. Because it relies on a star topology, 10BASE-T also makes your network easier to manage.

A slew of new Ethernet cards hit the market shortly after the 10BASE-T specification became final last year. Our real-world tests revealed few differences in performance among the cards — it's the Mac you put them into that makes the difference. When it comes to network hardware, performance is less of an issue than are reliability and support. For that reason, we recommend the **Asanté MacCon+ IIET, MacCon+ 30i ET,** and **MacCon+ LC** 10BASE-T Ethernet cards. All three cards are reasonably priced at $379 ($269 street) and come with a five-year warranty. In addition, Asanté provides Neon Software's NetMinder network-analyzer software, a tool that not only diagnoses board-level problems but also helps you manage your network — by monitoring network traffic to pinpoint bottlenecks, for example. Although you can mix and match cards from any vendors, why bother doing so if you can buy all your cards — and your 10BASE-T hub — from the same source? If you have any problems with your network hardware, you'll have to make only one phone call.

By its very nature, SCSI-adapter performance can't be dazzling — the Mac's SCSI bus is slower than either the NuBus or the PDS, so SCSI Ethernet performance pays a penalty. But if you need to connect a Mac Classic, Portable, or Plus to an Ethernet network, using an adapter is the only way to do so. The **Nuvotech NuvoLink SC-T** ($549) was the fastest of the SCSI adapters, has an additional connector for thicknet, and comes with a five-year warranty.



You won't go wrong choosing a 10BASE-T card from the Asanté line. If you need to connect a Macintosh Classic, Portable, or Plus to Ethernet, try the Nuvotech NuvoLink SC-T (center).

software that comes with the Dayna DaynaPORT E/II-T and E/LC-T, Racal Interlan MacConnect NIA310-10BT, and Shiva EtherPort IIT simply sends packets over the network as a test — you won't be able to discover if any problem is on the card or on the network itself. And cards from David Systems, Farallon, LRU Systems, MacProducts, NRC, Nuvotech, Technology Works, and Tri-Data Systems don't come with any type of diagnostic software at all. At test time, Farallon did ship Timbuktu with both of its cards, but that's due to change (see the "On the Horizon" sidebar). The Asanté MacCon+ IIET and MacCon+ 30i ET come with Neon Software's NetMinder 1.5 software, which comprises diagnostic software for the board as well as a network-management tool.

Neck-'n'-Neck File Transfer

As we discovered during our testing, card performance as shown by artificial benchmark tests of a board's components doesn't necessarily match performance in real-world situations. To real-world network users, however, performance is a simple matter — how long that darn wristwatch stays on the screen while you're copying files onto or reading files from your server.

To keep the variables to a minimum, we kept our test network simple — just one Mac client and one Mac server — and tested platform by platform, card by card. For example, we slipped two EMAC SpeedLink/II TP cards into two Mac IIci's and connected the Macs to a Farallon StarController EN. We installed Apple's AppleShare 2.01 file-server software on one Mac and installed System 6.0.7 software, which includes AppleShare client software, on the second Mac.

With the AppleShare server software running, we copied a 5-megabyte folder of various-sized files between the client and the server, noting how long it took for each transfer, and averaged the results of hundreds of transfers. We then ran the same tests on cards for the SE/30 and the LC and the SCSI adapters attached to a pair of Mac Classics. As we expected, performance was best at the top of the Mac family tree, on the IIci.

In addition, to show the dramatic difference between LocalTalk and EtherTalk, we ran the same sequence of file transfers over LocalTalk between two of each of our Mac platforms. In this case, the Mac's power — or lack of it — made little difference to file-transfer speed: LocalTalk trudged along equally slowly on all Macs.

Although Ethernet has a speed rating of 10 megabits per second and LocalTalk is rated at 230.4 kilobits per second, real-world factors such as network overhead, disk-drive-access speed, and CPU bottlenecks all take a toll on throughput. Real-world Ethernet performance with the fastest NuBus card, the Cabletron Systems E6010 DNI, was just over five times as fast as with LocalTalk (see Figure 4). The fastest SCSI adapter, on the other hand, the Nuvotech NuvoLink SC-T, transferred files from server to client less than twice as fast as LocalTalk. And because of the overhead associated with the AppleShare file-server software — such as keeping track of user access privileges — transferring files from client to server was slower than from server to client in all cases.

LocalTalk No Longer

The LocalTalk connection built in to the Mac may be convenient, but it can't keep pace with the demands placed on it by color graphics, sound, video, or multiuser databases — not to mention the added strain of System 7's file-sharing capabilities. Ethernet is not only a much more powerful transmission method but it's also gained long-term acceptance in corporate environments, universities, and government. With the recently adopted 10BASE-T specification, existing telephone-type twisted-pair wiring can often be used as the cable for an Ethernet network. And because 10BASE-T uses a star topology built around a central hub, it brings greater reliability and manageability to an Ethernet network.

Performance among the many 10BASE-T cards and SCSI adapters available today doesn't vary as widely as it did when we tested Ethernet cards last year. Your choice should be guided by pricing, warranty, quality of documentation, additional features, and whether a manufacturer offers a card for each type of Mac you need to connect. Prices among the current crop of cards are wide-ranging, and there are some real bargains out there — but look at the "Bottom Line" sidebar for our recommendations.

Table 1 Criteria

List price — The list price is the manufacturer's suggested retail price.
Street price — The street price is an average actual price charged by dealers around the United States in May 1991 or the price charged by those vendors that sell direct.
10BASE-T chip — The manufacturer of the transceiver chip, which controls the sending and receiving of network signals and the link-integrity test feature, among other functions.
Ethernet controller chip — The manufacturer of the network-interface controller chip, which controls the memory buffer as well as performing other functions.
Additional ports — Additional network-attachment ports for thicknet (AUI), thinnet (BNC), or Apple AUI (AAUI).
Auto-configuring — Can the card sense which media type is attached and automatically configure itself, saving you the trouble of setting jumper switches?
Diagnostic software — Does the card come with diagnostic software for confirming that it is functioning as it should?
Link-integrity LED — Does the card contain an LED that indicates link integrity, saving you a trip to the hub to determine if there's a problem with your 10BASE-T cable?

Stephanie N. Gleason is a systems analyst and consultant. Kelli Wiseth is a *MacUser* associate editor.

Table 1: Features of 10BASE-T Ethernet Cards

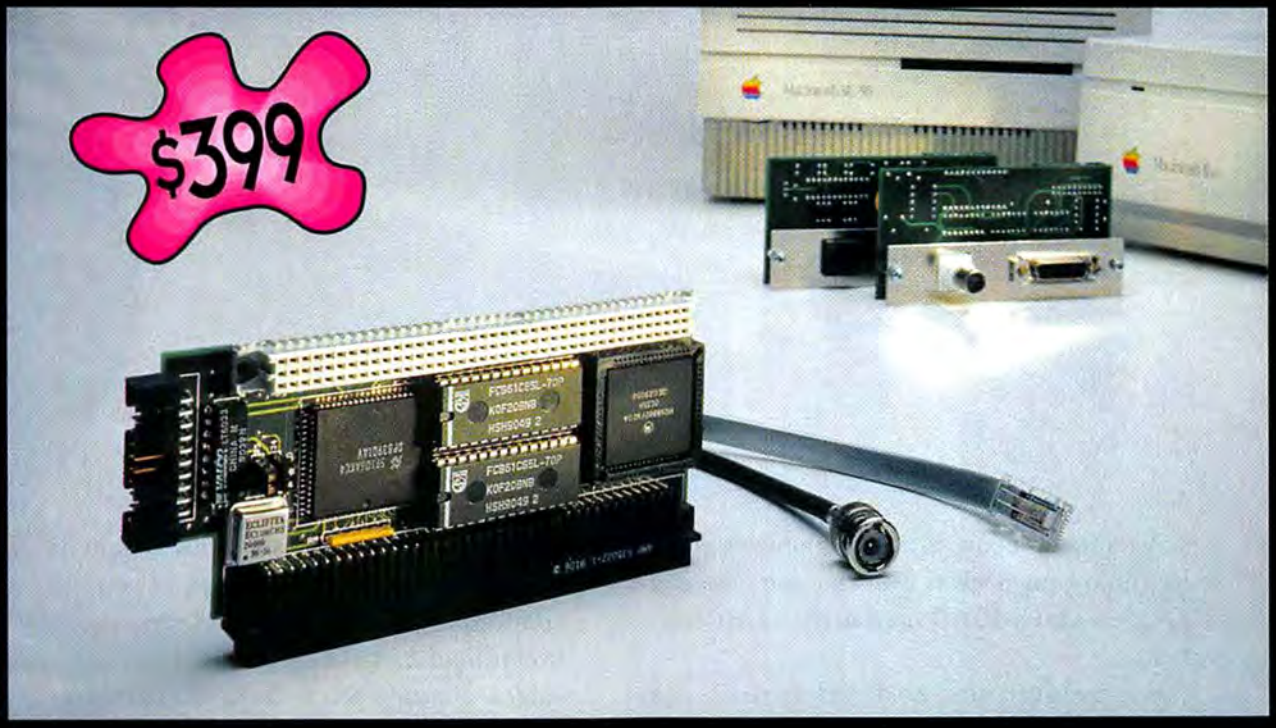
● = yes ○ = no	NuBus Asanté MacCon+ IIET ★★★★½	Cabletron Systems E6010 DNI ★★★½	Compatible Systems Ether2 TP ★★★★	David Systems Ether-T Mac ★★★	Dayna DaynaPORT E/II-T ★★★½
List price	$379	$699	$395	$350	$399
Street price	$269	$699	$395	$280	$270
Pros	Excellent warranty. Has port for thicknet.	Excellent manual and diagnostic software.	Has port for thicknet. Has link-integrity LED.	Good warranty.	Lifetime warranty. Has port for thicknet.
Cons	Doesn't auto-configure.	Most expensive NuBus card.	Doesn't auto-configure.	No diagnostic software. No additional ports.	Limited diagnostic software.
Features					
10BASE-T chip	Level One	Cabletron Gate Array	MicroLinear	MicroLinear	Advanced Micro Devices
Ethernet controller chip	National Semiconductor	National Semiconductor	National Semiconductor	National Semiconductor	National Semiconductor
Additional ports	AUI	AUI	AUI	none	AUI
Auto-configuring	○	○	○	NA	○
Diagnostic software	●	●	●	○	●
Link-integrity LED	●	●	●	○	●
Warranty	5 years	1 year	1 year	2 years	lifetime
Company	Asanté Technologies 404 Tasman Dr. Sunnyvale, CA 94089 (408) 752-8388	Cabletron Systems, Inc. 35 Industrial Way Rochester, NH 03867 (603) 332-9400	Compatible Systems Corp. P.O. Box 17220 Boulder, CO 80308 (303) 444-9352	David Systems, Inc. 701 E. Evelyn Ave. Sunnyvale, CA 94088 (408) 720-6867	Dayna Communications, Inc. 50 S. Main, 5th Floor Salt Lake City, UT 84144 (801) 531-0600

Table 1: Features of 10BASE-T Ethernet Cards, continued

● = yes ○ = no	NuBus EMAC SpeedLink/II TP ★★★½	Farallon PhoneNET Card for Ethernet ★★★★	MacProducts Magic Ethernet II/10T ★★★½	National Semiconductor EtherNODE•16 NB-T ★★★½	NRC Mac 1000TP ★★★
List price	$449	$495	$199	$399	$295
Street price	$380	$350	$199	$260	$250
Pros	Good warranty. Has NCSA Telnet software.	Auto-configures. Has link-integrity LED.	Lifetime warranty. Inexpensive.	Excellent manual and diagnostic software.	Good warranty. Has link-integrity LED.
Cons	Confusing manual.	No diagnostic software.	No link-integrity LED. No diagnostic software.	No link-integrity LED.	No additional ports.
Features					
10BASE-T chip	MicroLinear	MicroLinear	MicroLinear	National Semiconductor	MicroLinear
Ethernet controller chip	Intel	National Semiconductor	National Semiconductor	National Semiconductor	National Semiconductor
Additional ports	AUI	AUI	AUI	AUI	none
Auto-configuring	●	●	○	○	NA
Diagnostic software	●	○	○	●	○
Link-integrity LED	●	●	○	○	●
Warranty	2 years	1 year	lifetime	5 years	3 years
Company	EMAC 48431 Milmont Dr. Fremont, CA 94538 (800) 821-0806	Farallon Computing, Inc. 2000 Powell St., Ste. 600 Emeryville, CA 94608 (415) 596-9000	MacProducts USA 8303 Mopac, Ste. 218 Austin, TX 78759 (512) 343-9441	National Semiconductor 2900 Semiconductor Dr. Santa Clara, CA 95052 (800) 538-8510	Network Resources Corp. 2450 Autumnvale Dr. San Jose, CA 95131 (408) 263-8100

MagicBUS

Ethernet +1 for the Mac IIsi & SE/30



Flexibility

Only MagicBUS gives you Ethernet, PLUS the pass through capabilities for a second board. Now you can transform your Mac IIsi or SE/30 into a powerful workstation by attaching to the MagicBUS any PDS board, including: monochrome or color video boards, accelerator boards, fax/modem boards, or cache cards *and also* get the speed and connectivity of 32 bit Ethernet. The MagicBUS IIsi even has an FPU socket built onto the board for added performance.

Features

The MagicBUS boards are the size of the Apple Mac IIsi PDS slot adapter and are System 7.0 compatible. MagicBUS has an upgradeable Static RAM buffer for greater data throughput and is available in Thin Coax or Twisted Pair versions.

Don't limit the potential of your computer with any ordinary Ethernet Board. Even if you're not ready now, MagicBUS's features will support your upgrade needs for years to come.

Ethernet for other Macs

Sonic Systems also makes Ethernet Boards for the Mac SE, SE/30, II family, LC and IIsi. All boards are available with Thin Coax or Twisted Pair. In addition, cabling and connectors are now available from Sonic Systems. Call for pricing.

Features	Sonic MagicBUS	Asante MacCon 30IE
Connect any Video Boards	√	
Connect Accelerator Boards	√	
Connect Fax/Modem Boards	√	
Connect Cashe Cards	√	
Propietary Diagnostic Software	√	
On-Board FPU for IIsi	√	√
Warranty	5 years	5 years
Price	$399	$379
Conclusion	Physically Fit	Physically Unfit

Support

All Sonic Ethernet Boards come with a 5 year warranty, free network diagnostic software and unlimited technical support.

Call Today to order or for more info.

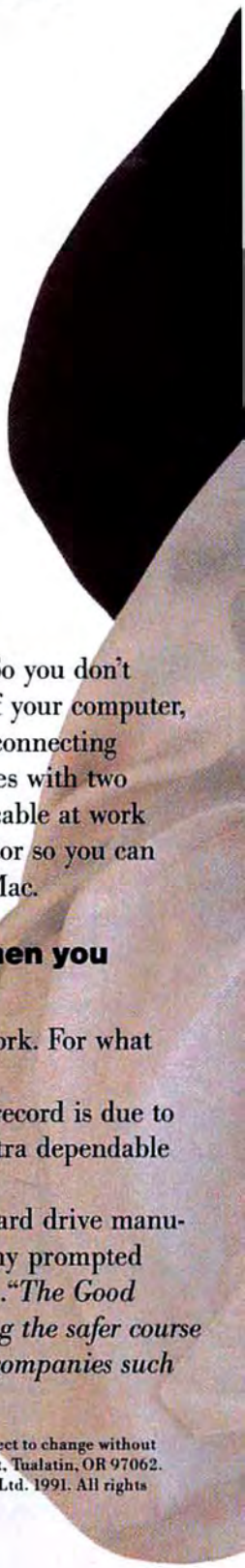
1-800-535-0725

Sonic Systems Inc.

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After you've seen a PocketDrive, the ultimate truth is going to hit you like a bolt of lightening: as long as you're buying a hard drive, why not get one that's easy to take with you and doesn't hog any desk space when you get there? Especially when PocketDrive offers all-new 2½ inch drive technology, fast 19 ms seek time, and whisper-quiet operation.

You've heard that compact drives are a pain to connect and disconnect? Not anymore. Instead of plugging directly into the back of your Mac,® PocketDrive connects to a cable. So you don't have to root around at the back of your computer, connecting, disconnecting, and reconnecting everything. And PocketDrive comes with two cables, allowing you to leave one cable at work and one at home, plus a T-connector so you can plug PocketDrive into any other Mac.

A funny thing happens when you use 2½" Quantum drives.

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as Quantum-backed La Cie..."

Conclusion? Your PocketDrive will perform flawlessly, even after being carelessly packed into countless overhead luggage compartments. And if it doesn't, at least we'll be around to do something about it.

With every 40MB PocketDrive comes a Silverlining.

One of the reasons your PocketDrive operates so efficiently is because it comes with Silverlining,™ a set of utilities the magazine reviewers are gushing over. MacUser noted that "*Silverlining is one of the most powerful and useful hard disk utilities you can find—most Apple engineers prefer it to Apple's own partitioning software.*"

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Table 1: Features of 10BASE-T Ethernet Cards, continued

● = yes ○ = no	NuBus Nuvotech NuvoLink II-T ★★★★	Racal Interlan MacConnect NIA310-10BT ★★★½	Shiva EtherPort IIT ★★★½	Sonic Systems Ether TwP/II ★★★★	Technology Works NuBus 10T/Thin/AAUI Ethernet ★★★★
List price	$395	$495	$399	$199	$429
Street price	$395	$495	$340	$199	$350
Pros	Has link-integrity LED. Excellent warranty.	Lifetime warranty. Has link-integrity LED.	Has port for thicknet. Includes cables.	Least expensive. Has port for thicknet.	Has ports for thinnet and Apple's AUI.
Cons	No diagnostic software.	Disorganized manual. No additional ports.	Doesn't auto-configure.	No link-integrity LED.	No link-integrity LED. No diagnostic software.
Features					
10BASE-T chip	MicroLinear	AT&T	Level One	MicroLinear	MicroLinear
Ethernet controller chip	National Semiconductor	National Semiconductor	National Semiconductor	National Semiconductor	National Semiconductor
Additional ports	AUI	none	AUI	AUI	BNC, AAUI
Auto-configuring	○	NA	○	○	○
Diagnostic software	○	●	●	●	○
Link-integrity LED	●	●	●	○	○
Warranty	5 years	lifetime	1 year	1 year	lifetime
Company	Nuvotech, Inc. 2015 Bridgeway Sausalito, CA 94965 (415) 331-7815	Racal Interlan 155 Swanson Rd. Boxborough, MA 01719 (508) 263-9929	Shiva Corp. One Cambridge Center Cambridge, MA 02142 (617) 252-6300	Sonic Systems, Inc. 21211 Rainbow Dr. Cupertino, CA 95014 (408) 725-1400	Technology Works 4030 Braker Ln.W., Ste. 350 Austin, TX 78759 (800) 688-7466

Table 1: Features of 10BASE-T Ethernet Cards, continued

● = yes ○ = no	NuBus Tri-Data Systems LanWay E-10T NuBus ★★★	Mac SE/30 Asanté MacCon+ 30i ET ★★★★½	Cabletron Systems E5010 DNI ★★★½	EMAC SpeedLink/SE30 TP ★★★½	Farallon PhoneNET Card for Ethernet ★★★½
List price	$345	$379	$749	$449	$549
Street price	$345	$269	$749	$380	$390
Pros	Has port for thicknet. Auto-configures.	Mac IIsi-compatible. Excellent warranty.	Excellent manual. Powerful diagnostics.	Has port for thicknet. Auto-configures.	Auto-configures. Has link-integrity LED.
Cons	Skimpy manual. No diagnostic software.	Doesn't auto-configure.	Most expensive of all cards.	Confusing manual.	No diagnostic software.
Features					
10BASE-T chip	Level One	Level One	Cabletron	MicroLinear	MicroLinear
Ethernet controller chip	National Semiconductor	National Semiconductor	National Semiconductor	Intel	National Semiconductor
Additional ports	AUI	AUI	AUI	AUI	AUI
Auto-configuring	●	○	○	●	●
Diagnostic software	○	●	●	●	○
Link-integrity LED	●	●	●	●	●
Warranty	1 year	5 years	1 year	2 years	1 year
Company	Tri-Data Systems 3270 Scott Blvd. Santa Clara, CA 95054 (408) 727-3270	Asanté Technologies 404 Tasman Dr. Sunnyvale, CA 94089 (408) 752-8388	Cabletron Systems, Inc. 35 Industrial Way Rochester, NH 03867 (603) 332-9400	EMAC 48431 Milmont Dr. Fremont, CA 94538 (800) 821-0806	Farallon Computing, Inc. 2000 Powell St., Ste. 600 Emeryville, CA 94608 (415) 596-9000

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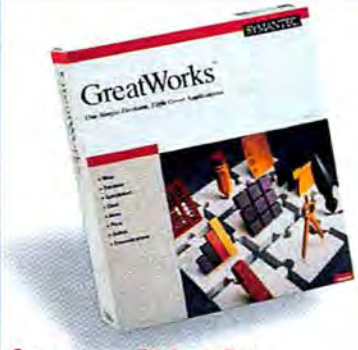
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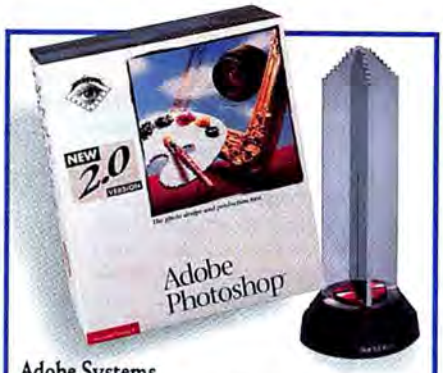
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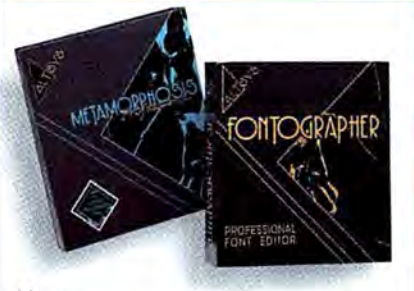
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After Hours Software
1352 ❼TouchBASE 1.02 79.
★Aladdin Systems ... 30 day MBG
6169 ❼Shortcut 1.5 45.
6740 ❼StuffIt Deluxe 2.0. 62.
★Aldus/Silicon Beach ... 30 day MBG
5100 ❼SuperCard 1.5 199.
★ALSoft ... 30 day MBG
9807 ❼DiskExpress II 2.07 53.
9808 MasterJuggler 1.53 53.
9886 ❼MultiDisk 1.27. 53.
Apple Computer/Claris
1074 ❼System 7.0 99.
8734 ❼HyperCard Developm. Kit 2.0V2 149.
★Argosy Software ... 30 day MBG
7872 ❼Software Bridge 2.0.1 99.
★ASD Software ... 30 day MBG
9440 ❼MaccessCard Reader *(req. FileGuard)* 299.
9439 ❼MaccessCard/FileGuard *(1)* Bundle 399.
7085 ❼FileGuard Extended 2.7 *(1 user)* 139.
7422 *(5 user)*. . 489. 7423 *(10 user)*. . 799.
★Baseline Publishing ... 30 day MBG
6656 ❼Personality 49.
7783 ❼INIT Manager 34.
1557 ❼APB Express. 56.
4780 ❼DAtabase 72.
★Berkeley Systems ... 30 day MBG
5737 ❼After Dark 2.0T 28.
2198 ❼More After Dark *(M.A.D)* 23.
2196 ❼After Dark & M.A.D. Bundle 42.
1541 ❼Stepping Out II 2.02 54.



SuperMac Tech. ... 60 day MBG

5625 ❼ *PixelPaint Professional 2.0*–8-bit masking, multiple/larger documents, image merging, color correction, pressure sensitive brushes, PixelPaper, and more $499.
3380 ❼ *PixelPaint 2.1* 165.

the way to go



Advanced Software ... 30 day MBG

8051 ❼ *Intouch 1.1*–DA stores names, addresses, notes, prints envelopes and labels, dials phone numbers and more! "Best name-and-address DA," *MacUser*, 4/91. (4½ Mice rating) ... $39.
9986 *Intouch Server (3-Pack)* 112.

★Casady & Greene ... 60 day MBG

2269 ❼QuickDEX 1.4D 34.
7443 ❼A.M.E. 1.1.3 *(single user)* 159.
7444 ❼A.M.E. *(5 user)*509. 7831 *(10 user)*849.

★CE Software ... 60 day MBG

4689 MockPackage Plus Utilities 4.4 31.
1727 ❼CalendarMaker 3.0.1 31.
6278 DiskTop 4.01 63.
7518 Alarming Events 1.03 84.
8024 ❼QuicKeys² 2.0.1 94.

★Central Point ... 30 day MBG

5040 Copy II Mac 7.2 24.
5041 Mac Tools Deluxe 1.1 79.

★Connectix ... 30 day MBG

7830 ❼Maxima 2.0 45.
1563 ❼Virtual 3.0 *(July '91)* 74.
6647 ❼HandOff II 2.2 56.
1914 Mode 32 1.0 95.



SuperMac Tech. ... 60 day MBG

3377 ❼ *DiskFit 2.0*–Makes file location and recovery fast and foolproof because it backs up in Finder readable format. Allows for unattended backup, subvolumes, enhanced folder selection and more $58.

★Dantz Development ... 30 day MBG

5255 ❼Retrospect 1.3 $147.
7945 Retrospect Remote 1.3 264.
7946 Remote *(10 Pack of inits)* 147.

★Design Science ... 30 day MBG

7887 MathType 2.11 88.

★Digitalk ... 60 day MBG

5166 ❼SmallTalk/V Mac 1.1 123.

Dubl-Click Software

7974 ClickChange 1.04 56.
1824 ❼Calculator Construction Set 2.09.6 62.

★ElseWare Corp. ... 30 day MBG

1507 Bar Code Kit 135.

★Fifth Generation ... 30 day MBG

4287 ❼PYRO! 4.01 25.
3955 ❼Suitcase II 1.2.10 49.
8284 SuperSpool 5.0 62.
8286 SuperLaserSpool 2.02 93.
5178 ❼FastBack II 2.5 118.
5725 ❼DiskLock 2.01 118.

★Go Technology ... 60 day MBG

1488 ❼Hot Keys Universal *(word process.)* 36.
1490 ❼Hot Keys PageMaker 36.

★Hyperpress ... 30 day MBG

4233 Icon Factory 2.0 56.

ICOM Simulations

4084 On Cue 1.3 35.
1474 TMON Professional 142.

★Insight Development ... 30 day MBG

6171 MacPrint 1.23 93.

★JAM Software USA ... 30 day MBG

6089 ❼Smart Alarms w/Appt. Diary 3.1 . 63.

★Kensington ... 30 day MBG

9301 ❼PassProof *(right)* or 9300 *(left)* ea. 65.

★Kent Marsh Ltd. ... 30 day MBG

5457 ❼QuickLock 2.0 34.
9513 ❼FolderBolt 1.01 73.
2591 ❼The NightWatch 1.03 84.
9510 ❼FolderBolt/NightWatch Bundle . 139.
6134 ❼MacSafe II 2.0 106.

★Kiwi Software ... 60 day MBG

6267 KiwiEnvelopes! 3.1.1 32.
7445 KiwiFinder Extender 1.02 63.

★Loop Software ... 30 day MBG

5442 ❼PictureBook 3.2A 39.

★Magic Software ... 30 day MBG

7267 ❼AutoSave II 2.0 26.
7270 ❼Backmatic 2.0 50.

★Microcom ... 30 day MBG

8562 ❼Complete Undelete 1.1 48.
4803 ❼Virex 3.2 57.
8561 911 Utilities 89.

★Microseeds Pub. ... 60 day MBG

7068 ❼INITPicker 2.01 34.
2913 ❼Redux 1.63 49. 7116 ❼Rival 1.1.6 49.

★Microsoft ... 30 day MBG

4471 QuickBasic 1.0 64.

Multi-Ad Services

8850 Multi-Ad Search 1.0 115.

★Nine to Five Software ... 30 day MBG

9767 ❼Reports 2.0 94.

★Now Software ... 30 day MBG

6925 Now Utilities 3.0 *(August '91)* 84.
6739 ❼Prototyper 3.0 184.



Microcom ... 30 day MBG

4803 ❼ *Virex 3.2*–Comprehensive solution to the threat of computer viruses $57.
8561 *911 Utilities*–Troubleshooting, file/disk recovery, complete undelete, isolate bad sectors, & Virex. 89.
8562 ❼ *Complete Undelete 1.1*–Tracks & recovers files in the trash 48.

★Olduvai ... 30 day MBG

4503 ❼MultiClip 2.1.7 69.

★ON Technology ... 1 year MBG

6385 On Location 1.02 75.
9801 ❼Meeting Maker *(5)* 289. 9800 *(10)* 549.

★Palomar Software ... 30 day MBG

8210 ❼PLOTTERgeist 2.0 *(June '91)*... 249.

★Salient Software ... 30 day MBG

7404 ❼DiskDoubler 3.7 49.

★Softstream ... 30 day MBG

5440 ❼HyperHit 3.0 119. 1568 *(network)* 389.

★Solutions, Inc. ... 60 day MBG

3448 ❼SmartScrap & The Clipper 2.1... 56.
3449 ❼SuperGlue II 2.01 75.

★Spinnaker ... 30 day MBG

6692 Plus 2.0 279.

★SuperMac Tech. ... 60 day MBG

3377 ❼DiskFit 2.0 58.



Strata

7773 ❼ *StrataVision 3D 2.0*–"The best combination of accessibility & sophistication" (*MacWEEK*). StrataVision 3D 2.0 now adds even greater ease of use, more modeling tools, faster rendering, & a complete animation environment $549.

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Expert Lon Poole



Timeworks ... 30 day MBG

7115 *Publish It! Easy with File It! 2.1*–All-in-one desktop publisher includes: page layout, drawing & painting tools, slide-show feature, & File It!, advanced built-in database & mail merge program. Eddy Award Winner . **$139.**

★Symantec ... 30 day MBG

5176 ❼Symantec AntiVirus for Mac *(SAM)* 65.
5724 ❼Symantec Utilities for Mac *(SUM II)* 96.
6748 ❼Norton Utilities for the Mac 1.1. . . 83.
3421 ❼THINK Pascal or 3420 ❼THINK C 165.
9957 THINK Reference 1.0 69.

★Synex ... 30 day MBG

6665 ❼MacPhonebook 3.0 32.
7147 ❼MacEnvelope 5.02 57.
6666 ❼MacEnvelope+ 2.0 185.

★Tactic Software ... 30 day MBG

8964 ❼MasterFinder 1.1. 49.

★Teletypesetting ... 30 day MBG

8601 TScript Basic 1.4. 54.
8058 TScript 1.4 91.

★TGS Systems ... 60 day MBG

6667 ❼Prograph 2.5 309.

★Wolfram Research ... 30 day MBG

8273 ❼Mathematica Enhanced 2.0 *(July)* 799.

★Zedcor ... 60 day MBG

3985 ❼ZBasic 5.0. 99.

CD-ROM

Adobe Systems

8794 Adobe Type On Call CD/ATM 47.
9443 Adobe TOC & Porta Drive Bundle . 659.

CD Technology

8057 Porta Drive CD-ROM 649.
7686 Porta Drive & MS Office CD-ROM . 999.

★Discovery Systems ... 60 day MBG

9968 Birds of America *(CD-ROM)* 26.
9965 Sherlock Holmes on Disc *(CD-ROM)* 26.
9966 Shakespeare on Disc *(CD-ROM)*. . . 26.
9967 Nautilus *(Subscription kit, CD-ROM)* 20.
1874 Mammals of N. America *(CD-ROM)* 52.

Dubl-Click

9944 The WetSet CD *(CD-ROM)*. 218.

★Everex ... 30 day MBG

1875 Metro CD CD-ROM Drive 649.

★Highlighted Data ... 30 day MBG

7771 ❼Webster's Dictionary *(CD-ROM)*. 159.

★HyperGlot ... 30 day MBG

9778 ❼Learn to Speak English, 7473 French, or 7829 Spanish *(CD-ROM)* . . . *ea.* 64.

★Microsoft ... 30 day MBG

6382 The Microsoft Office *(CD-ROM)*. . . 599.

Multi-Ad Services

ProArt Trilogy 1, 2 or 3 *(CD-ROM) ea.* $219.

NEC

6636 Image Gallery *(2800 line art)* 246.
6959 Type Gallery PS *(Adobe fonts)* 246.
9441 CDR36 CD-ROM Portable Drive . . 399.

★Somak ... 30 day MBG

LaserArt I or II *(CD-ROM)* *ea.* 62.

Toshiba

6749 XM 3201 CD-ROM Drive. 699.

VIDEO & SOUND

MUSIC, MIDI, ANIMATION

★Ars Nova ... 30 day MBG

1215 ❼Practica Musica 2.2. 66.

Articulate Systems

2034 VoiceImpact 82.
2232 VoiceImpact Pro 179.
9975 Voice Navigator II 549.

★Bogas Productions ... 60 day MBG

9279 Studio Session MIDI Utility 1.0 59.
6135 Super Studio Session w/Music Library 99.



Abracadata, Ltd.

9990 *Design Your Own Home - Architecture*–Modify or design the home of your dreams! Includes a library of architectural objects and sample floor plans. Everything you need to create professional drawings or a simple sketch . **$63.**

Bright Star Technology

6093 ❼interFACE 1.0 249.

Coda Music Systems

8188 ❼MusicProse 2.1 299.
5604 ❼Finale 2.6.1. 549.

Computer Friends

8271 ❼ColorSnap 32+ 1.1 649.

Electronic Arts

1846 Deluxe Music Construction Set 2.5 . 84.

★Farallon Computing ... 30 day MBG

6770 MacRecorder Voice Digitizer 2.0.3 104.
2199 MacRecorder Sound System 2.0.3 174.
6766 MediaTracks. 205.

Full Logic Studios

1163 Mac-Sound *(241 sound effects)*. . . . 79.

MacConnection

2244 System 7 Video. 9.
2245 System 7 Video with Lon's Book . . . 25.

★MacroMind ... 30 day MBG

9353 ❼MediaMaker 1.0 489.
6159 ❼MacroMind Accelerator 2.01 . . . 125.
5087 ❼MacroMind Director 3.0 (July '91) 629.

★Paracomp ... 30 day MBG

7839 ❼FilmMaker 2.0.1 435.

Passport Designs

8253 ❼TRAX 2.0.1 $57.
8255 ❼Desktop Music Creativity *(CD-ROM)* 189.
3117 ❼Master Tracks PRO 4 4.5 315.
8250 ❼Encore 2.0 379.
3115 ❼MIDI Interface 79.

Pixar

8966 MacRenderMan 1.0 549.
1596 MacRenderMan/ShowPlace Bundle 649.

RasterOps

Full line available. Partial listing.

8526 Video Expander 499.
9784 RasterOps 24SI 649.
8944 RasterOps 24STV 1249.

★Symmetry ... 30 day MBG

8172 ❼Mariah 1.0 93.

★Total Systems ... 30 day MBG

9282 Galileo I Video *(Plus)* or 8653 *(SE)* . 449.

★Voyager ... 30 day MBG

9322 Voyager Videostack 2.0 69.
9328 Voyager CD Audiostack 69.
9326 Beethoven Symphony No. 9 *(CD-ROM)* 69.
9327 Igor Stravinsky *(CD-ROM)*. 69.

LEARN & PLAY

FOREIGN LANGUAGES, TRAINING, GAMES

Abracadata, Ltd.

9995 Instant Decorator 29.
9990 Design Your Home - Architecture, 9992 Interiors or 9994 Landscape *ea.* 63.
Libraries available. call

Accolade

1423 Hard Ball II 31.
8220 Jack Nicklaus Golf 34.

★Aldus/Silicon Beach ... 30 day MBG

3503 Dark Castle or 3502 Beyond DC *ea.* 32.

★Baseline Publishing ... 30 day MBG

7785 ❼Talking Moose. 23.

★Beacon Technology ... 30 day MBG

❼HyperBible 2.0 *(KJ or NI)* . . *ea.* 125.

Broderbund Software

4314 Type! 1.0. 18.
6516 The Playroom 1.1 *(CP)* 29.
Carmen Sandiego Series *(CP)* . .*ea.* 29.
6384 PlayMaker Football 1.1.1 29.
9804 RoboSport or 8195 BannerMania . . 35.



Letraset ... 30 day MBG

6301 ❼ *ColorStudio 2.0*–Now System 7 savvy with support for Photoshop plug-ins, a full CYMK viewing and image editing mode and the Shapes annex to incorporate PostScript drawing capabilities **$139.**

demos this new tool

8266 SimEarth 1.0 $40.
4966 SimCity 1.2 *(CP)* 29.
5871 SimCity Supreme 1.2C 47.

★Carina Software ... 30 day MBG

5726 Voyager 1.2 87.

★Casady & Greene ... 60 day MBG

2268 ❼Crystal Quest 2.2x, 7495 ❼Mission Starlight or 7498 ❼Sky Shadow *ea.* 29.

★Centron Software ... 30 day MBG

8525 ❼Casino Master 3.24 *(B&W)* 41.
8524 ❼Casino Master 4.1 *(Color)* 45.

Davidson & Associates

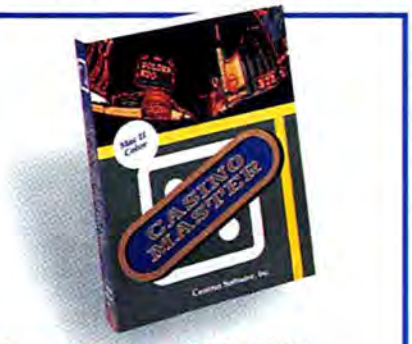
6128 Math Blaster Mystery 1.0 *(CP)* 29.

EARTHQUEST

8050 ❼EARTHQUEST 2.0 48.

Electronic Arts

6716 Pipe Dreams 1.0 17.
8088 Earl Weaver Baseball 32.
8643 Harpoon 39.
1907 PGA Golf 39.



Centron Software ... 30 day MBG

❼*Casino Master*–Turn your Mac into a casino! Realistic graphics, help/advice windows, card counting, manual with rules/strategy. Includes Blackjack, Craps, Roulette, Baccarat and Poker. 8525 *(B&W)* . . . **$41.** 8524 *(Color)* . . . **$45.**

FTL/Software Heaven

1555 OIDS 25.

★Great Wave ... 30 day MBG

2276 ❼KidsTime or 5642 ❼KidsMath *ea.* 26.
4334 ❼NumberMaze 26. 8527 *(Color)* 36.
8044 ❼NM Decimals & Fractions *(Color)*. 36.
1517 ❼ReadingMaze. 26. 1513 *(Color)*. 36.

★HyperGlot Software ... 30 day MBG

❼Word Torture 4.0-Beginner to Advanced *(Span., Fren., Germ., Ital. & Rus.)* *ea.* 35.
❼Pronunciation Tutor - Beginner *(Span., Fren.)* *ea.* 35. *(Germ., Chin.)* 39.
❼Verb Tutor - Intermediate *(Spanish, French, German)* . . . *ea.* 39.
9348 ❼Chinese Writing Tutor 39.
9349 ❼Chinese Survival Manual 39.
6611 ❼Kanjimaster - Beg. *(Japanese)*. . . 99.

★Inline Design ... 30 day MBG

1562 3 in Three 1.1 *(August '91)*. 31.
8809 ❼Tesserae or 7622 ❼Darwin's Dil. *ea.* 31.
1944 ❼Swamp Gas 31.



Interplay Productions

1894 *BattleChess*–Every move comes to life for not only challenging but entertaining chess playing **$29.**
1893 *CheckMate*–Challenges beginner to expert with 2D and 3D views and more. . . 31.

Interplay Productions

1894 BattleChess *(3D animation)*. 29.
1893 CheckMate *(infinite play levels)* 31.

★Learning Company ... 30 day MBG

2670 ❼Reader Rabbit 3.0 *(CP) (ages 4-7)* 30.

★Leister Productions ... 30 day MBG

7126 ❼Reunion 2.0 109.

Microprose

2008 ❼Railroad Tycoon 40.

★Microsoft ... 30 day MBG

2868 Flight Simulator 1.02 *(CP)* 33.

★Nordic Software ... 30 day MBG

8260 Word Quest 1.0. 30.
8257 PreSchool Pack 1.0 35.

★Penton Overseas ... 30 day MBG

❼VocabuLearn/ce Levels I & II *(French, Italian, Spanish, German, Russian, Hebrew, & Japanese)*. *ea.* 35.



Advanced Gravis ... 30 day MBG

9964 *SuperMouse*–Hi-res (320 dpi) mouse with user-defined buttons to access menu commands. For graphics, DTP and A/UX. 84.
9963 *MouseStick*–Advanced optical joystick with NEW dual control for MS Flight Simulator **$59.**

★Personal Training Sys. ... 60 day MBG

❼Over 60 learning levels from beginner to advanced for QuarkXPress, Excel, Persuasion, FileMaker II/Pro, PageMaker, Illustrator, FreeHand, Word, HyperCard, System 7, and the Mac *ea.* $50.

Sierra On-line

9733 Hoyle's Book of Games II 23.
7367 Space Quest III *(color reqs. 2 Mb)* . . 35.

Sir-Tech Software

8229 ❼Bane of the Cosmic Forge 35.
8228 Wizardry II: Knight of Diamonds *(CP)* 28.

Software Toolworks

4619 ❼Mavis Beacon Typing 1.3 *(CP)*. . . 32.
1908 World Atlas 1.0 52.

★Spectrum Holobyte ... 30 day MBG

3464 Tetris, 6112 Welltris or 8180 Faces *ea.* 22.
3459 Falcon 2.2.1 or 8181 Vette 1.0 . *ea.* 33.

★Spinnaker ... 30 day MBG

2328 Sargon IV 1.03 *(CP) (chess)* 28.



Insignia Solutions

❼*SoftPC 2.0*–Run MS-DOS applications. Compatible with Mac II family, SE, SE/30, Classic, LC, Portable and Plus. Offers complete IBM PC compatibility combined with Mac's ease of use. See line listing for specifics.

StudyWare

ACT, GMAT, GRE, or SAT Prep . *ea.* 29.
8098 LSAT Prep for the Mac 2.5 35.

★Terrace Software ... 30 day MBG

8192 ❼Mum's The Word 1.0 *(gardening)* 79.

★Toyogo ... 30 day MBG

1993 Nemesis Scribbler 31.
7624 ❼Nemesis Go Master 5.0 *(August '91)* 36.

★XOR ... 30 day MBG

6040 MacGolf Classic 1.0 *(CP)* 52.

COMMUNICATIONS

MODEMS, MAIL, NETWORKS

★Abaton ... 30 day MBG

6266 InterFax 24/96 Modem 349.

Applied Engineering

8363 ❼DataLink/Mac Portable 209.
8938 ❼DataLink LC 265.
8362 ❼QuadraLink. 205.

320U

MMC

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2198 ❼ *More After Dark (M.A.D.)*–25 new displays for After Dark. Featuring Mowin' Man, Tunnel, Crazy Kittens, Art Museum $23.
5737 ❼ *After Dark 2.0T*–Stops screen burn-in. 28.
2196 ❼ *After Dark & M.A.D. Bundle* 42.

★Baseline Publishing ... 30 day MBG
8942 ❼DoubleTalk *(2 terminals)* 84.
★Beagle Bros. ... 30 day MBG
7691 Flash 1.1. 125.
★CE Software ... 60 day MBG
5174 ❼QuickMail *(5)* . 215. 5173 *(10)* . 315.
★CompuServe ... 60 day MBG
1676 ❼Macintosh Membership Kit 1.03 . 22.
1673 ❼CompuServe Navigator 3.0. 49.
1674 ❼Membership Kit/Navigator Bundle 68.
★CoStar Corp. ... 30 day MBG
1995 AppleTalk Network Box-for AddressWriter or 1997 LabelWriter II/II Plus. . *ea.* 127.
★DataViz ... 60 day MBG
1823 ❼MacLink Plus/PC 5.0. 129.
4842 ❼MacLink Plus/Translators 5.0. . . 109.
★Dayna ... 60 day MBG
DaynaPORT E: SE, SE/30, II, IIsi, LC 279.
DaynaTALK *(5 Pak)* 379. *(10 Pak)* 689.
8719 EtherPrint or 9888 *(10 Base T) ea.* 349.
Dove Computer
6758 DoveFax Desktop 1.1.1 295.
9634 DoveFax+ 1.1.1. 359.
EveryWare
8077 AllShare 1.1.4. 139.
★Farallon Computing ... 30 day MBG
Full line available. Partial listing.
9805 ❼Timbuktu 4.0. 135.
4866 ❼Timbuktu/Remote 2.0.1. 135.
8707 Liaison 3.0 279.
9960 PhoneNET Talk. 135.
9961 PhoneNET Card PC 209.
PhoneNET Card *(SE/30 or II)* . *ea.* 279.
6273 PhoneNET StarConnector 10-Pack. 129.
4869 PhoneNET Connector 10-Pk *(DIN-8)* 198.
2206 PhoneNET StarController 300 899.
6687 PhoneNET StarController-EN. . . . 1739.
★Freesoft ... 60 day MBG
6115 ❼White Knight 11. 85.
★Global Village ... 30 day MBG
8946 ❼TelePort A300 139.
8945 TelePort/FAX. 185.
Hayes
2300 ❼Smartcom II 3.2. 84.
8614 Personal Modem 2400 Plus 149.
7391 Ultra 9600 Modem 669.
★Insight Development ... 30 day MBG
1296 Mosaic 1.0 *(3)*. . 249. 1295 *(10)*. . 375.
Insignia Solutions
7557 ❼Access PC 1.1. $62.
7058 ❼SoftPC-AT/EGA Module 1.4. . . . 124.
9726 ❼SoftPC 2.0 *(Classic, LC, SE, Port.)* 135.
4089 ❼SoftPC 1.3. 245.
Intel Corporation
5119 2400EX Modem 179.
6420 2400EX MNP Modem. 229.
8193 9600EX Modem *(w/QuickLink II)*. . 549.
★Int'l Business Software ... 30 day MBG
8581 DataClub 8581 *(3)* 199. 8580 *(10)* 539.
★Kennect Tech. ... 30 day MBG
5631 ❼Rapport 1.3.6 195.
7588 Drive 360 or 7590 Drive 1200. *ea.* 249.
5632 Drive 2.4 *(3½")* *(incl. FastBack II)* . 325.
★Microcom ... 30 day MBG
7459 ❼CarbonCopy Mac *(single)*. 59.
1556 ❼CarbonCopy Mac *(unlimited)* . . 179.
8027 MacModem V.32 689.
★Microsoft ... 30 day MBG
9444 ❼Microsoft Mail 3.0 *(1-5 user)* . . . 269.
★Nuvotech ... 60 day MBG
3000 TurboNet ST *(DIN-8)* 30. 6751 *(12)* 279.
6272 NuvoLink SC 389.



Freesoft ... 60 day MBG
6115 ❼ *White Knight 11*–10 award winning communications program that supports XMODEM, YMODEM, ZMODEM, Kermit, and CompuServe Error Correcting protocols. Includes Okyto 1.0 and a free subscription to GEnie $85.

★Practical Peripherals ... 30 day MBG
3102 2400 Baud External Modem 179.
8994 2400 V.42 bis Modem. 209.
7934 PM9600SA Modem 1.26 489.
9849 SmartPack 9600. 529.
★Prometheus ... 30 day MBG
8350 ProModem 2400 Mini for Mac. . . . 124.
8349 ProModem 24/96 MSR. 289.
8738 ProModem 9600M Plus 599.
8990 ProModem Ultima 689.
★Shiva ... 30 day MBG
3444 ❼NetSerial 3.3. 275.
4347 NetBridge or 4942 ❼TeleBridge. . 409.
3443 ❼NetModem V2400 3.3. 339.
6519 ❼EtherGate 1.50.1. 1299.
8189 FastPath V *(July '91)* 1889.
Sitka/TOPS
4188 Teleconnector *(DIN8)* 23. 2230 *(10)* 189.
3720 TOPS Flashcard 155.
6264 ❼TOPS Network 3.1 *(August '91)* . 187.
★Software Ventures ... 30 day MBG
3455 ❼MicroPhone II 3.0 215.
★Solutions, Inc. ... 60 day MBG
6720 FAXGATE Plus 3.0 *(July '91)* 239.
★Symmetry ... 30 day MBG
9969 EasyShare 1.2.1. $69.
★Synergy ... 30 day MBG
6618 ❼VersaTerm 4.5 90. 6619 PRO 3.5 177.
★Traveling Software ... 60 day MBG
3729 LapLink Mac III Connectivity Pac . . 93.
★Zoom Telephonics ... 30 day MBG
1168 MX2400R Modem *(w/QuickLink II)* . 89.
1176 MX2400S Modem *(w/SendFax 9600)* 105.
1179 V.42bis Modem *(w/MacPack)* 169.

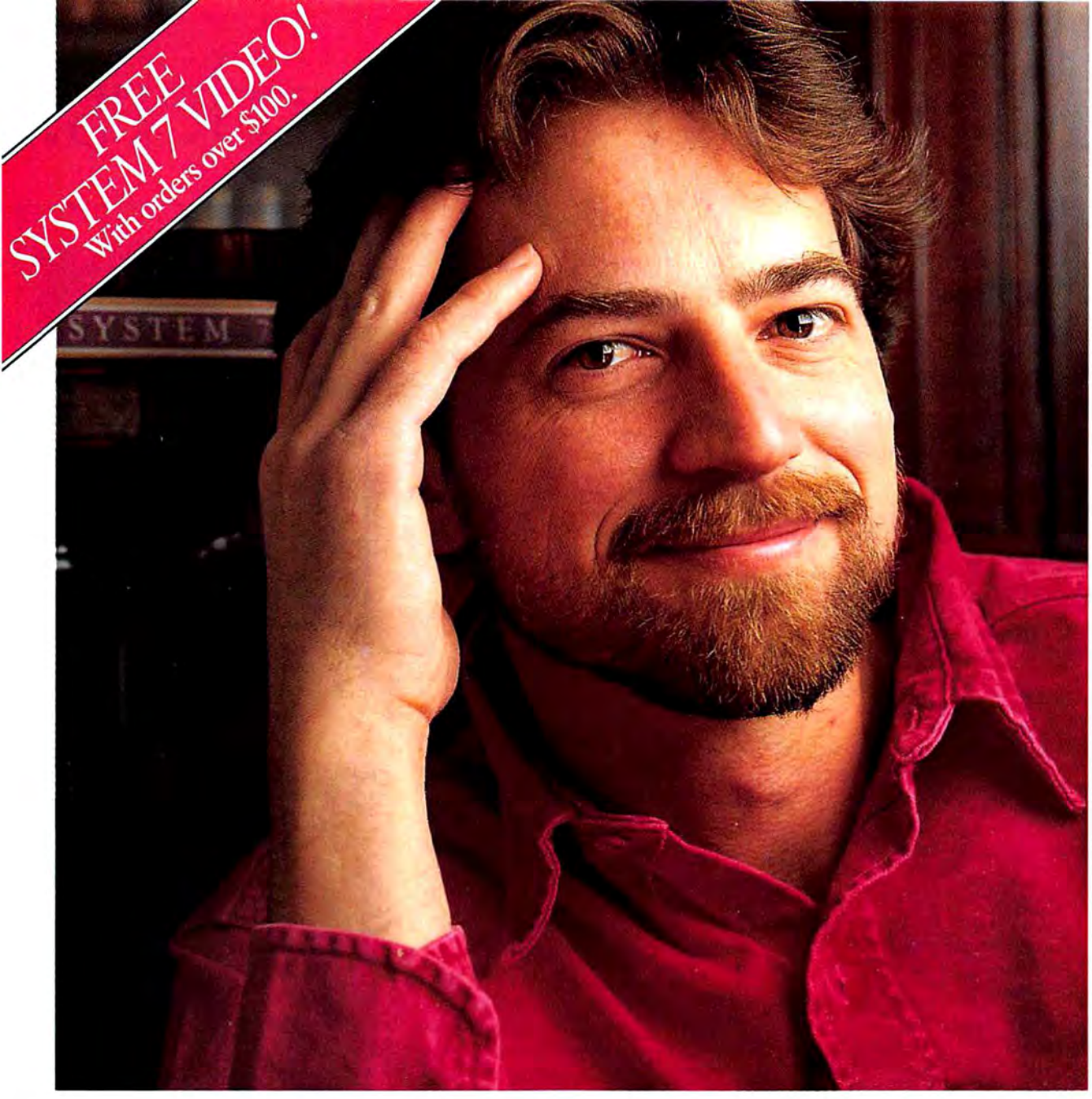
INPUT/OUTPUT

MONITORS, KEYBOARDS, MICE, PRINTERS & SCANNERS

★Abaton ... 30 day MBG
7432 ❼Scan 300/GS *(reqs. Scan Kit)* . . 999.
Includes free ProPoint ($79 value).
1495 Scan 300/Color *(reqs. install. kit)* . 1419.
1496 Int. Kit for 300/Color w/Photoshop 479.
1537 LaserScript LX 1729.
★Advanced Gravis ... 30 day MBG
9963 Gravis Mouse Stick. 59.
9964 Gravis Super Mouse. 84.
American Power
6686 UPS 370ci 339.
Applied Engineering
9799 ❼Cache-In. 199.
Bravo Communications
9813 2 Pos. Laser *(compatible switch box)* 95.
9817 4 Pos. Laser *(compatible switch box)* 119.
Caere
8124 ❼Typist 1.0. 479.
4476 ❼OmniPage 2.12. 495.
★CoStar Corp. ... 30 day MBG
1884 LabelWriter II. 193.
1880 LabelWriter II Plus. 299.
1418 AddressWriter. 469.
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1885 Stingray ADB 89.
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As a *Macworld* Contributing Editor, author of *The Macworld Guide to System 7,* and all-around operating system aficionado, Lon Poole has been writing a lot about System 7 lately. But the best way to get a writer to really start making sense is to take his hands off the keyboard and put his face in front of the camera. So that's what we're doing—a video of Lon Poole explaining all about System 7 produced at the studios of PCTV®, somewhere in the wilderness near Marlow, NH.

If you've been trying to figure out what System 7 can do for you, this is a great way to find out. And it's *free to anyone who places an order over $100.* (Limit one per customer.) Or you can buy a copy for $9.

By the way, Lon's publisher and accountant asked us to remind you that we'll also sell you his book on System 7 for just $19. Or buy the book *and* video for $25. You'll be System 7 savvy in no time.

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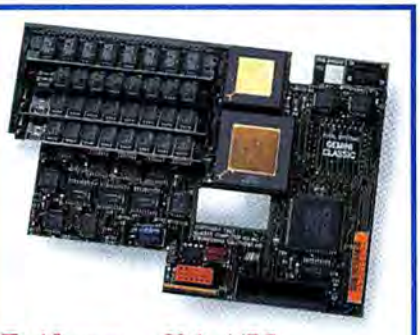
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8329 PLI 200 Meg Ext. Drive 1179.
1866 Quick SCSI Card. 319.
Sigma Designs
1501 DoubleUp. 159.

Table 1: Features of 10BASE-T Ethernet Cards, continued

● = yes ○ = no	Mac SE/30 National Semiconductor EtherNODE•32 SE/30-T ϟϟϟ½	Sonic Systems Ether TwP/SE ϟϟϟϟ	Tri-Data Systems LanWay E-10T Direct Slot ϟϟϟϟ	Mac LC Asanté MacCon+ LC ϟϟϟϟϟ	Dayna DaynaPORT E/LC-T ϟϟϟϟ½
List price	$449	$199	$425	$379	$399
Street price	$290	$199	$425	$269	$270
Pros	Excellent networking tutorial and manual.	Tied for least expensive. Mac IIsi-compatible.	Has port for thicknet. Auto-configures.	Has port for thinnet. FPU socket on board.	FPU socket on board. Lifetime warranty.
Cons	Out-of-date installer.	No link-integrity LED.	No diagnostic software.	None.	No additional ports. Most expensive LC card.
Features					
10BASE-T chip	National Semiconductor	MicroLinear	Level One	Level One	Advanced Micro Devices
Ethernet controller chip	National Semiconductor	National Semiconductor	National Semiconductor	National Semiconductor	National Semiconductor
Additional ports	AUI	none	AUI	BNC	none
Auto-configuring	○	NA	●	●	NA
Diagnostic software	●	●	○	●	●
Link-integrity LED	○	○	●	●	●
Warranty	5 years	1 year	1 year	5 years	lifetime
Company	National Semiconductor 2900 Semiconductor Dr. Santa Clara, CA 95052 (800) 538-8510	Sonic Systems, Inc. 21211 Rainbow Dr. Cupertino, CA 95014 (408) 725-1400	Tri-Data Systems 3270 Scott Blvd. Santa Clara, CA 95054 (408) 727-3270	Asanté Technologies 404 Tasman Dr. Sunnyvale, CA 94089 (408) 752-8388	Dayna Communications, Inc. 50 S. Main, 5th Floor Salt Lake City, UT 84144 (801) 531-0600

Table 1: Features of 10BASE-T Ethernet Cards, continued

● = yes ○ = no	Mac LC Sonic Systems Ether TwP/LC ϟϟϟϟ½	SCSI adapter Compatible Systems Ether+ ϟϟϟ	LRU Systems Nodem ϟϟϟ	Nuvotech NuvoLink SC-T ϟϟϟ½
List price	$199	$495	$495	$549
Street price	$199	$495	$410	$549
Pros	Tied for least expensive. FPU socket on board.	Has port for thicknet.	Can be anywhere in SCSI chain.	Has port for thicknet. Excellent warranty.
Cons	No additional ports. No link-integrity LED.	Must be at end of SCSI chain.	No additional ports for other cable types.	Must be at end of SCSI chain.
Features				
10BASE-T chip	MicroLinear	MicroLinear	MicroLinear	MicroLinear
Ethernet controller chip	National Semiconductor	National Semiconductor	National Semiconductor	National Semiconductor
Additional ports	none	AUI	none	AUI
Auto-configuring	NA	○	NA	○
Diagnostic software	●	●	○	●
Link-integrity LED	○	●	●	●
Warranty	1 year	1 year	1 year	5 years
Company	Sonic Systems, Inc. 21211 Rainbow Dr. Cupertino, CA 95014 (408) 725-1400	Compatible Systems Corp. P.O. Box 17220 Boulder, CO 80308 (303) 444-9352	LRU Systems, Inc. 17881 Los Felice Dr. Saratoga, CA 95070 (408) 370-7480	Nuvotech, Inc. 2015 Bridgeway Sausalito, CA 94965 (415) 331-7815

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Gamma Correction:
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Silverscanner
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Brightness level:
default
Input resolution:
150 dpi
Size: 419K
Output Resolution:
200 dpi
Line Screen: 150 lpi
Gamma Correction:
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Microtek Scan
Original:
8 x 10 color print
Brightness level:
default
Input resolution:
150 dpi
Size: 1201K
Output Resolution:
200 dpi
Line Screen: 150 lpi
Color Correction:
None





Silverscanner
Original:
8 x 10 color print
Brightness level:
default
Input resolution:
150 dpi
Size: 1220K
Output Resolution:
200 dpi
Line Screen: 150 lpi
Color Correction:
None

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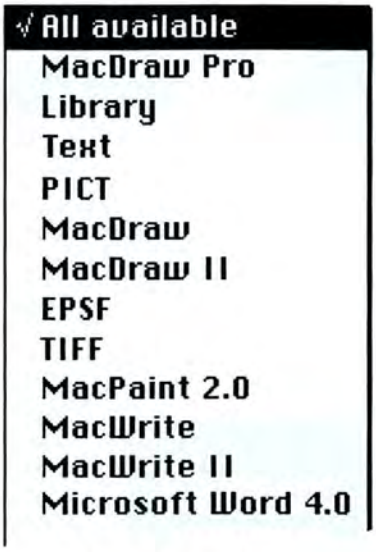
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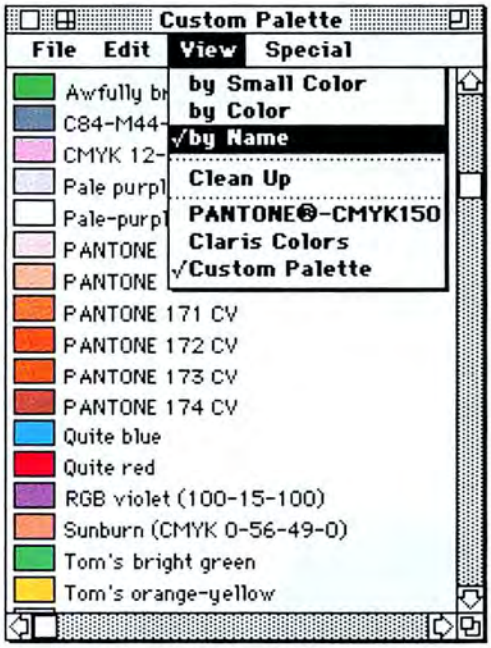
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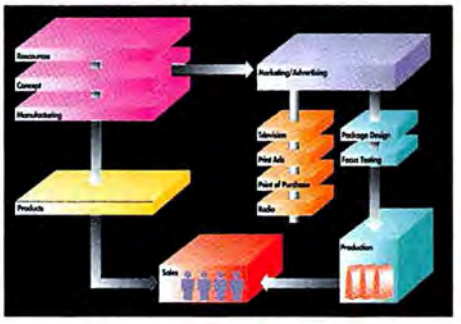


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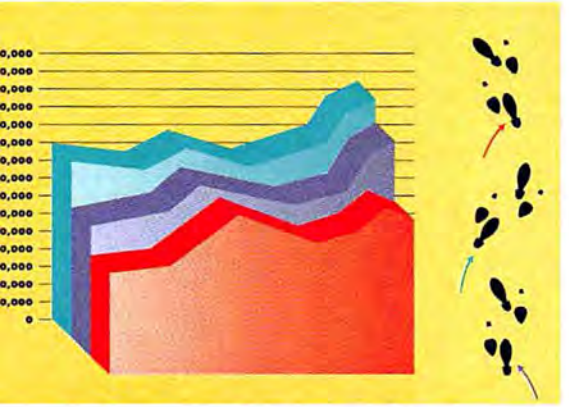
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Adobe isn't jumping on the TrueType bandwagon, but it has *promised System 7 compatibility for all its products by year's end. New revs of Illustrator and Photoshop will support publish-and-subscribe; Illustrator will support TrueType fonts; and Illustrator, ATM, and Streamline will be 32-bit clean. Type 1 fonts and the INITs for Type Reunion and TypeAlign will work correctly in the Extensions folder. Meanwhile, call Adobe at (415) 961-0911 if you have questions about its products and System 7.*

By Aileen Abernathy



Color correctness: We've seen numerous announcements of ever-better solutions to the problem of color fidelity between screen display and paper output. Now RasterOps offers the CorrectColor Calibrator, the first device that measures the color values of monitor displays *and* printed media — paper, film, and photographs. Other key advantages: It performs calibrations across the entire screen, ensuring color uniformity, and it works with PCs and SPARCstations, letting you control color across platforms. The CorrectColor Calibrator achieves all this by combining the capabilities of a monitor calibrator, a densitometer, and a colorimeter into a single $2,999 instrument. Although it can't perform color adjustments among scanner, screen, and printer, the CorrectColor supports color WYSIWYG products such as Kodak's new Color Management System — which may be bundled with the calibrator. Thus far, the CorrectColor is compatible only with RasterOps monitors (surprise!) and the Apple 13-inch display, but it's still a giant leap forward in calibration for high-end color work.

Printer power: In-house color comping just got more affordable. The new PhaserJet PXi uses Tektronix's phase-change inkjet technology to produce smooth, brilliant colors at 300 dpi on *plain paper* (see last month's New on the Menu section). The tabloid-sized PhaserJet PXi is also the first printer to sport the long-awaited PostScript Level 2 RIP. The printer is networkable (parallel, serial, and AppleTalk ports), ships with 10 megabytes of RAM (expandable to 18 megabytes), produces color pages in as little as two minutes — and costs $9,995. ➤ Wish you had more than 35 resident fonts in your LaserWriter IINTX? The FontCard NTX, from Sonnet Technologies ([714] 261-2800), plugs in to the printer's controller board and adds 25 more Adobe Type 1 fonts to the printer's on-board ROM. $595.

Product news: EPS Exchange, a nifty new utility from Altsys, can reliably export FreeHand artwork as fully editable Illustrator 88 or 3.0 files. It adds two new file-save options to FreeHand 3.0's Save As and Export dialog boxes; converted documents retain all original elements, including fills and text along a path. $149. ➤ Want to reduce production times for your presentations or video productions? Check out VisualMagic, a new series of "clip animations." Each VisualMagic volume has 12 megabytes of animated titles, charts, transitions, and sequences in PICS format, which most animation programs can import. Six volumes are shipping ($89 each for high-density floppies or a CD-ROM); themes include Business, and Buttons and Backgrounds. Barrington Stephens (800) 367-6240.





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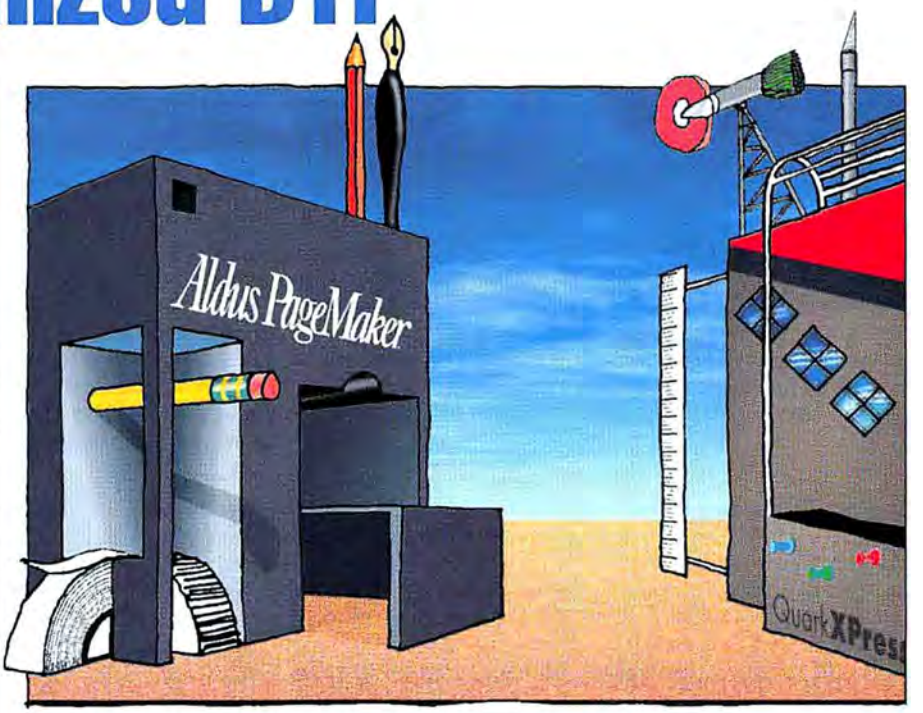
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Customized DTP

Thanks to the growing market in add-on software, you can now tailor PageMaker, QuarkXPress, and DesignStudio to meet your needs.

By Eric Taub



While laboring with your favorite (or not-so-favorite) page-layout program, you've probably muttered, "Gee, I wish PageMaker let you edit its tracking tables" or "Gosh, wouldn't it be nice if XPress could do indexes?" (But you may not have said "gee" or "gosh.") Until recently, you couldn't do much to customize page-layout programs — for better or worse, you were stuck with the packaged features. But now there's a healthy, growing market in third-party software specifically developed to beef up programs such as PageMaker and QuarkXPress.

These add-on utilities let you change the design of the program itself, not just its pages. Some are stand-alone applications that you must use separately from the page-layout program but that offer added features such as color-separation capabilities. Others are plug-in modules that add features you can access from *within* the page-layout program, usually by selecting them from a menu.

Most third-party utilities have been developed to work with either PageMaker or QuarkXPress, although DesignStudio also supports plug-in modules. For little or no investment, you can obtain freeware or shareware goodies that supply shortcuts to make your page-layout program simpler to use. (These offerings are usually available from on-line services or from user groups.) At the high end, you can spend thousands of dollars — far more than you paid for the page-layout program — on full-blown pagination and workgroup publishing systems.

PageMaker

Aldus' PageMaker 4.0 has a full complement of auxiliary utilities, beginning with its bundled Table Editor, which lets you create tables and bring them into PageMaker as PICT graphics. PageMaker offers built-in capabilities that must be supplied by add-ons in other programs, most notably its hooks to Microsoft Mail and its powerful facilities for indexing and creating tables of contents. Furthermore, PageMaker can automatically link stories to external text files, whereas QuarkXPress requires an add-on utility such as CopyFlow to achieve similar text-updating capabilities.

On the other hand, PageMaker — unlike QuarkXPress and DesignStudio — doesn't support plug-in modules, so most PageMaker enhancements are stand-alone utilities. Aldus, however, has announced that future versions of PageMaker will support Additions, a programming language that combines features of DesignStudio's DesignScript and QuarkXPress' XTensions. Additions provides a scripting language for users, enables third parties to write plug-in modules, and provides a way to link PageMaker with other applications dynamically.

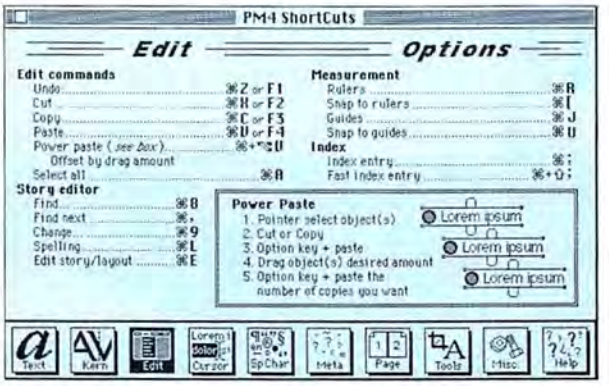


Figure 1: Do you have a problem remembering keyboard shortcuts or kerning techniques? PM4 ShortCuts, a shareware DA, shows you some of the finer points of PageMaker 4.0, including otherwise undocumented features.

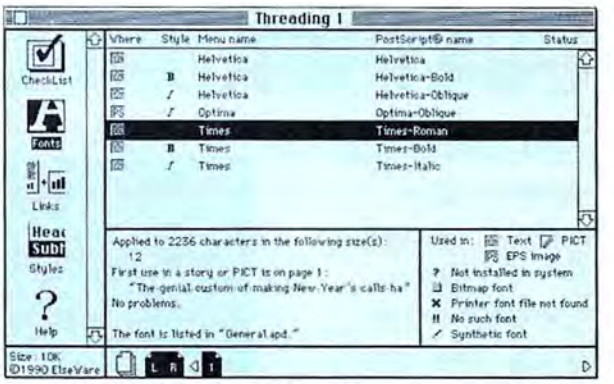


Figure 2: CheckList 1.0 is a must-have shareware utility for desktop publishers (unless you buy 2.0, the commercial version). It scans your PageMaker documents and compiles a list of critical information — including all the fonts and files you need in order to output the pages at a service bureau.

Freeware and Shareware. For just $10, you can use PM4 ShortCuts, a shareware DA (see Figure 1) that gives you a readily accessible list of common and not-so-common ways of manipulating PageMaker — from keyboard commands to the intricacies of kerning — including undocumented features.

If you've ever sent a PageMaker document to a service bureau for high-resolution output and been stymied because you forgot to include an essential font or graphics file, you'll appreciate CheckList 1.0, a $45 shareware utility from ElseWare (see Figure 2). This little gem scans a PageMaker file and compiles a list of crucial information about it — including the name of all its fonts and linked graphics files. Version 2.0 of CheckList (scheduled to ship this summer) is a commercial program with a higher price tag ($179), but it's a must-have utility for PageMaker users who work with service bureaus. In addition to providing information on PageMaker files, CheckList 2.0 reports on print-to-disk PostScript files from a variety of sources, including FreeHand, Illustrator, and QuarkXPress. It can also gather all the files needed to output a particular document and copy them to a common folder or floppy disk. It even compresses a job's files automatically, segmenting them as necessary to fit onto floppies — and the compressed files are self-extracting.

Database Publishing. ElseWare also makes DataShaper, a $179 database-publishing utility. This slick PageMaker add-on helps you turn information from database or spreadsheet files into fully formatted PageMaker documents such as mailing labels, catalogs, and directories. DataShaper isn't a stand-alone program but rather a cleverly designed set of import and export filters that let you work within PageMaker to design formats for publishing tab- or comma-delimited text.

Refined Tracking. PageMaker 4.0's five levels of tracking — very tight, tight, normal, loose, and very loose — don't have the flexibility that some users demand. PMTracker ($99), from EDCO Services, lets you tweak the values in PageMaker's KernTracks file, enabling you to customize the tracking settings for each installed font or for Font/Style Groups you can create (see Figure 3). You can set up different tracking levels for different point sizes of a font, which gives you a typographical flexibility and precision that's far beyond what's available in QuarkXPress.

Color Separations. Unlike rivals QuarkXPress and DesignStudio, PageMaker can't perform four-color separations, but two add-on products are specifically designed to separate PageMaker documents. Aldus offers PrePrint ($495), which separates PageMaker files that have been printed to disk as PostScript .sep files. PrePrint can't separate PICT graphics, but it does let you open and color-correct TIFF images. SpectreSeps PM ($295), from Pre-Press Technologies, also opens and separates PageMaker .sep files, including PICT graphics; SpectreSeps doesn't let you edit individual TIFF images, however. Version 1.5 of PrePrint (due out sometime this summer) adds numerous refinements, including image resampling; separation of selected page ranges; and the ability to separate files created in FreeHand, Illustrator, or Photoshop.

Other Add-ons. Foreign-language publishers will appreciate Aldus' PageMaker Dictionaries ($89 each), which include Central European, Scandinavian, Spanish & Portuguese, and British English. Aldus also markets the PageMaker Portfolio Series, $89 packages of predesigned layouts designed for general business needs, newsletters, and manuals. (There are also several third-party template packages for PageMaker and QuarkXPress, but that's another story for another issue.)

Another PageMaker enhancement to consider, particularly if you frequently get files from DOS users, is Mastersoft's Word for Word for PageMaker (which should be shipping now). This $79.95 set of filters enables PageMaker to import and export text formats it ordinarily doesn't support (and some it does), including DOS formats such as WordStar, MultiMate, Lotus 1-2-3, and DisplayWrite, as well as Macintosh formats such as FullWrite and WordPerfect.

QuarkXPress

Quark has been heavily promoting XTensions, the plug-in modules for QuarkXPress that let developers add special features to the program, and not surprisingly, the XTensions industry is robust, with more than three dozen modules currently available. Even stand-alone applications that work with QuarkXPress use an XTension to get information into and out of QuarkXPress layouts. You can find XTensions that run from the sublime to the ridiculous — from the $5,100 Autopage

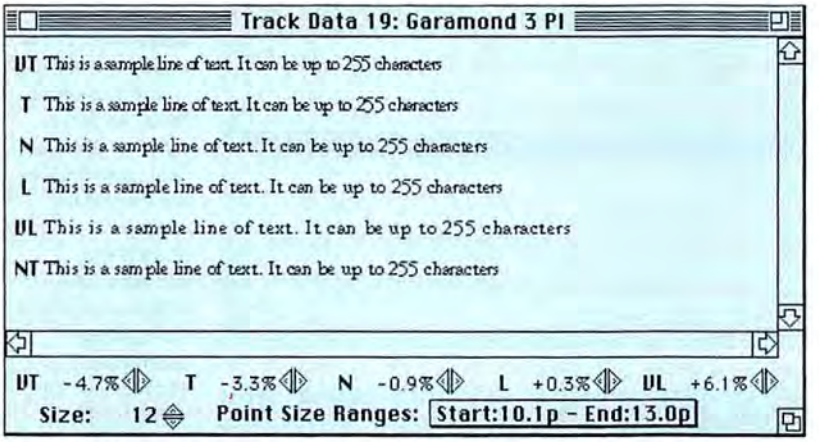


Figure 3: PMTracker lets you define the exact tightness or looseness for each of PageMaker's predefined tracking levels. It even lets you vary the tracking values for different fonts and point sizes, yielding greater flexibility than QuarkXPress' tracking editor.

automatic-pagination system (K. Erf Associates) to frivolous freebies such as the Sounds XTension (Nocturnal Creations).

To let you know what's available for QuarkXPress, Quark publishes a free XTensions catalog (to get a copy, send a postcard to Quark). There are far too many XTensions and other QuarkXPress add-ons to list them all (and more are being released every day), so here are some of the highlights. By the time you read this, many of these XTensions should be available from a single source. XChange, a subsidiary of AutoMatrix, has signed agreements to distribute XTensions from North Atlantic Publishing Systems, Managing Editor Software, and Em Software. XChange will also provide technical support, installation, and training for QuarkXPress as well as XTensions. The company can even connect developers with QuarkXPress users who need custom XTensions written.

Freeware and Shareware. The best-known free XTension is QuarkFreebies 3.0, available from on-line services or directly from Quark for a $25 handling fee. QuarkFreebies is actually two XTensions. FeaturesPlus adds several convenient features to QuarkXPress, including a slew of new user-definable defaults, Make Fraction and Make Price text styles, a measurement-conversion palette, and commands for word-space tracking and removing manual kerning. NetworkConnection lets you communicate and exchange text and picture files with other QuarkXPress users on a network.

Default Settings ($20), a shareware XTension from A Lowly Apprentice Production, covers some of the same ground as FeaturesPlus, but it adds cute touches such as NeXT-style scroll bars. One handy feature lets you set the display resolution for imported TIFF images.

TypesettingMarksXT, a free XTension from the British *MacPublishing Magazine*, lets you add typographical sophistication to your text via the Typesetting Marks dialog box. You can convert straight quotes to curly (smart) ones, change *fi* and *fl* into ligature characters, strip out extra spaces after periods, and turn a space-hyphen-space into an em dash.

Two separate XTensions perform file-reconnaissance duties similar to what CheckList does for PageMaker documents. FlashEditing is a free XTension, from the French company Reseaux, that prepares a cover sheet about your QuarkXPress document for a service bureau. You enter the necessary imagesetting specs (such as output resolution and media) in FlashEditing's dialog box, and FlashEditing compiles a list of all the fonts and graphics used in the document. Simply print the form and send it with your files to the service bureau. QuarkLog, from Quark, is a stand-alone application that scans QuarkXPress documents and compiles lists of included fonts and graphics files. Although QuarkLog is handy (and free),

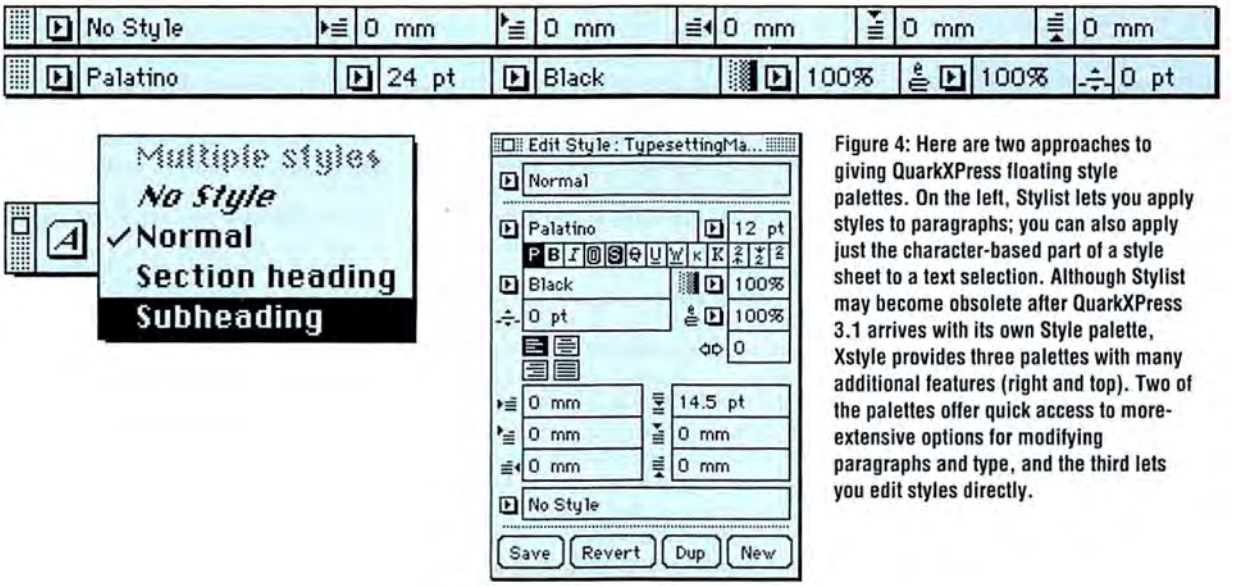


Figure 4: Here are two approaches to giving QuarkXPress floating style palettes. On the left, Stylist lets you apply styles to paragraphs; you can also apply just the character-based part of a style sheet to a text selection. Although Stylist may become obsolete after QuarkXPress 3.1 arrives with its own Style palette, Xstyle provides three palettes with many additional features (right and top). Two of the palettes offer quick access to more-extensive options for modifying paragraphs and type, and the third lets you edit styles directly.

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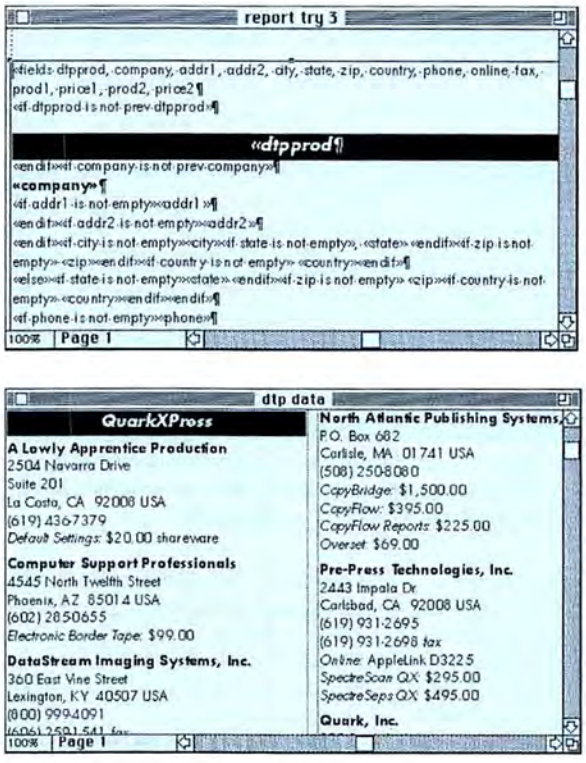


Figure 5: QuarkXPress can do database publishing — with the help of Xdata. An Xdata script, or prototype (top), specifies how to automatically create a QuarkXPress document. The bottom page is from the resulting QuarkXPress document, which includes fully formatted text that was exported from a database in tab-delimited format.

Quark distributes it only to service bureaus that participate in its support program. However, Quark doesn't prevent service bureaus from giving out copies of QuarkLog, so if you've been a faithful imagesetter customer, ask your service bureau if you can have a copy.

Guides. XTensions developers clearly feel a need to beef up QuarkXPress' handling of page guides. Grid Layout ($19.91), from J. Michael Marriner, lets you specify custom grids of vertical and horizontal guides and even choose a color for grid lines so you can distinguish them from other kinds of guides. Liberty Engraving offers Grids&Guides ($49.95), an XTension that lets you position guides and grids, and it provides many options (gutter width, page offset, and so on) for grid creation.

Style Palettes. Another favorite target of XTensions developers is floating palettes for accessing QuarkXPress' style sheets — inspired, no doubt, by PageMaker's Style palette (see Figure 4). Reseaux's Stylist ($50) is a simple palette that has a pop-up menu of available styles and the ability to let you apply just the character-based part of a style sheet to a range of text. Em Software's Xstyle ($39) provides *three* new floating palettes. Two are for applying character and paragraph attributes (which were omitted from QuarkXPress' floating Measurements palette); attributes such as horizontal scaling; left and right margins; and, of course, style sheets. The third palette lets you define styles, so you don't have to wade through QuarkXPress' seemingly endless layers of dialog boxes whenever you want to edit or add a style. You can also compare and duplicate styles among QuarkXPress documents.

Before plunking down cash for these palettes, note that QuarkXPress 3.1, due to ship this fall, will have its own style-sheet palette. Xstyle's numerous palettes should still be valuable, however, as should Stylist's ability to apply style attributes to a range of characters.

Database Publishing. In many ways, Em Software's Xdata ($199) is remarkably similar in approach and capabilities to ElseWare's PageMaker product, DataShaper. Xdata lets you automatically apply all of QuarkXPress' formatting capabilities to information that's been exported from a database or spreadsheet program in tab- or comma-delimited form (see Figure 5). With Xdata, you first build a QuarkXPress template to show how a page should look and then create an Xdata "prototype"

QuarkXPress has the best publication-management tools, with XTensions that handle the tracking, assembly, and configuration of all publication elements.

that specifies the formatting and placement of the text. Although DataShaper uses somewhat arcane codes to indicate conditional statements and mail-merge functions, Xdata has a simple but surprisingly powerful scripting language that should be comfortable for anyone used to HyperTalk or BASIC. You can produce impressive, complicated reports, using Xdata to automatically assemble, arrange, and format information.

More from Quark. You can get more XTensions from Quark, but you have to pay. The $79.95 QuarkXTras package has XTensions that are useful to high- and low-end publishers, including Print Area (prints selected areas of a page), Line Check (searches for poorly justified or poorly hyphenated lines), Adobe Screen Values (reduces moiré patterns in the printing of color separations), and Printer Calibration (adjusts halftone screens to compensate for dot gain). XTras also has drivers for Sharp, Howtek, and Apple scanners, so graphics can be scanned directly into QuarkXPress.

Indexing and TOC. QuarkXPress has no built-in facilities for indexing or producing tables of contents, but Virginia Systems addresses this deficiency with Sonar Bookends and Sonar TOC ($129.95 and $99.95, respectively). Both products use XTensions to add a Sonar menu to QuarkXPress. To index a document with Bookends, you first export it as an ASCII text file, and Bookends can rapidly index every word in the file, words that occur no more than a specified number of times, or words from a list you supply. Bookends supports multiple-level indexes, and it saves the finished index as a text file, which you can import into QuarkXPress and format there. Sonar TOC extends the capabilities of Bookends (which is required for its operation), letting you tag words for a table of contents from inside QuarkXPress by creating and applying special style sheets. Once you have applied the appropriate styles to items you want included, a single command generates the table of contents as a text file, which, like the index file, can be imported back into QuarkXPress for formatting.

A companion product, Sonar Professional ($795), is a text-retrieval program with text-analysis and indexing capabilities. Not only can Sonar Pro find all instances of a particular word or phrase but it can also locate words a specific distance from other words or those associated with a given topic. It can search several documents sequentially, display relationships between words contained in those documents, and produce a text report.

Color Separations. Just as Pre-Press Technologies makes SpectreSeps PM for PageMaker, it also makes SpectreSeps QX ($495) for QuarkXPress. Although the PageMaker version color-separates an entire document after it's been printed to disk, SpectreSeps QX is more specialized, supplying only capabilities lacking in QuarkXPress' internal separator—namely the separation of continuous-tone images (color TIFF and PICT2). SpectreSeps QX lets you apply sophisticated color corrections (including compensation for scanner anomalies) and specify printing options (including screen angles) within QuarkXPress. You can create, edit, and move the program's separation styles among documents, so you can quickly build a collection of styles that are optimized for the scanners and output devices you use most frequently.

A related XTension, SpectreScan QX ($295), lets you operate many popular color scanners from within QuarkXPress. SpectreScan ships with drivers for the Microtek MSF-300Z and La Cie Silverscanner; drivers are also available for scanners from Eikonix, Howtek, Nikon, and Sharp.

Publication Management. Thanks to numerous specialized XTensions, QuarkXPress is the best equipped of all Mac page-layout programs for publication management — that is, the tracking, assembly, and configuration of all elements of a publication. Although some of the tools are niche products — developed for newspapers or advertising layout, for example — others have universal appeal for harried desktop publishers.

Reseaux's Alias and Info XTensions ($65 each) provide simple tools for copy manipulation and management. Alias is actually a set of three XTensions for batch search-and-replace operations on text

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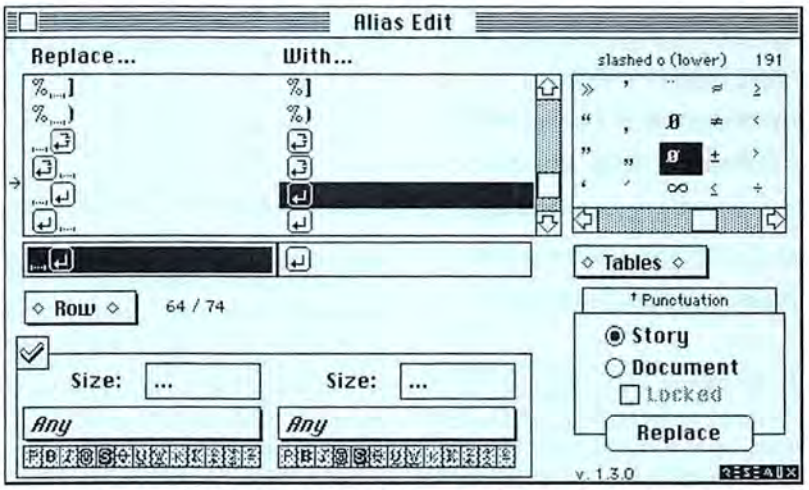


Figure 6: Alias, from the French company Reseaux, is an XTension that performs batch search-and-replace operations on text. You can then insert typographically correct characters into imported text.

within a QuarkXPress document or as it's being imported (see Figure 6). Operations include inserting typographical niceties (such as smart quotes, em dashes, and ligatures), converting PC files to Mac format, and filtering control characters out of downloaded files. Info compiles lists of detailed (even esoteric) information about every text and picture box in a document as well as all defined style sheets, H&J (hyphenation and justification) settings, and custom colors. This data can then be printed or saved to disk as a QuarkXPress file.

North Atlantic Publishing Systems' series of CopyFlow products is rapidly becoming standard equipment along with QuarkXPress at many magazines and newspapers. NAPS' flagship product, CopyFlow ($395), provides powerful automatic links between text and picture boxes in QuarkXPress and the original word-processing and graphics files. CopyFlow's document linking provides page-assembly capabilities that are far more powerful than those of PageMaker. The CopyFlow XTension lets you assign names to text and picture boxes in a QuarkXPress document and set which graphics or word-processing files belong in each box (or linked chain of boxes). Once you've identified the picture or story that goes in a particular box, CopyFlow can perform quick batch imports of individual, selected, or all text or picture items in a document, with a single command. Then you never have to manually import an item again, no matter how many times it's been edited. CopyFlow can also perform batch exports of elements and even combine all the text in a publication into a single text file for centralized editing.

Once you've used CopyFlow to name boxes in a document, you can keep track of where elements go, with CopyFlow Reports ($225). This XTension creates a separate QuarkXPress document that contains a thumbnail view of each of your source document's pages, indicating the names you've assigned to each box. It can also create an ASCII text file with information about box names, editors assigned to them, number of lines in each story, and overset text (text that overflows the last box in a text chain).

Speaking of Overset, that's the name of another XTension from NAPS. In QuarkXPress, whenever you have overset text, a small black box appears at the lower right corner of the text box. If you're using Overset ($69), just click on the overset mark and Overset creates a temporary text box on your page's pasteboard so you can see exactly how much extra text there really is. After you've taken care of the extra text, the Overset box disappears automatically.

NAPS' CopyFlow Geometry ($495) lets you automate the creation of QuarkXPress documents with a scripting language similar to the one used by Xdata or DesignStudio's DesignScript. You create an ASCII text file with the necessary page-geometry descriptions; CopyFlow Geometry then reads this file as if it were reading a recipe, automatically creating a

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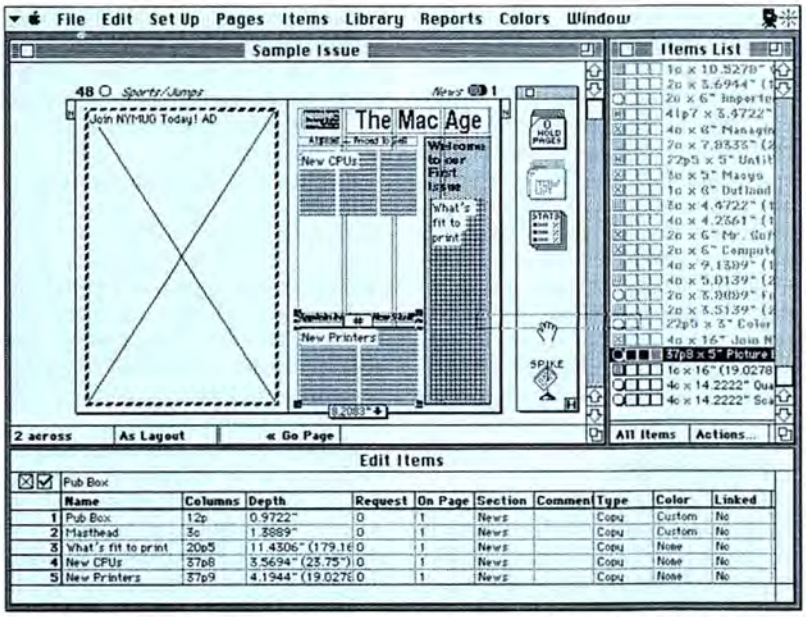


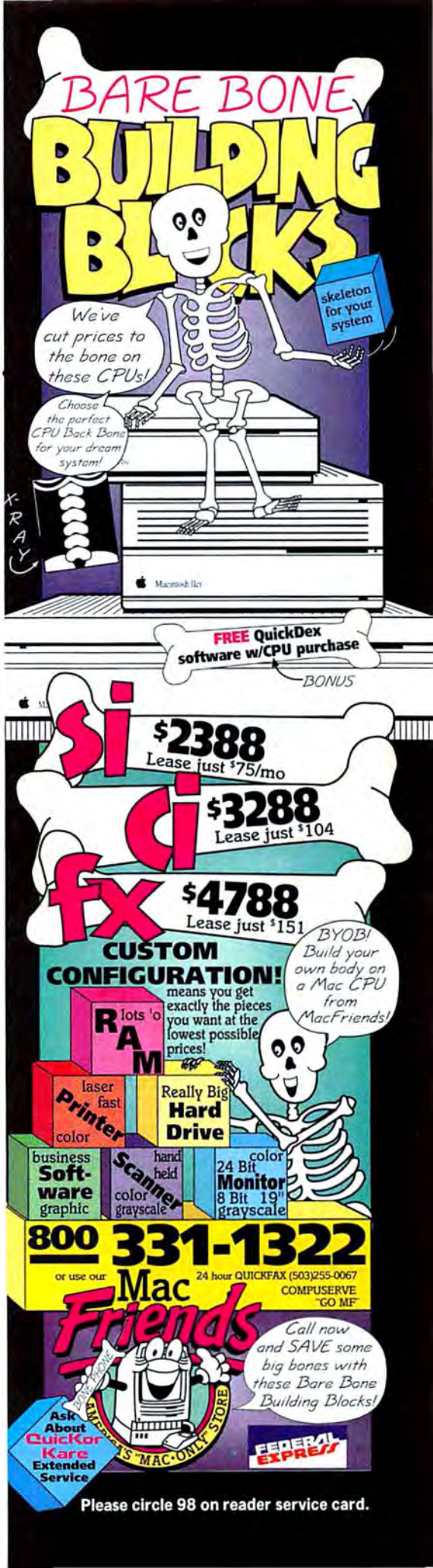
Figure 7: Page Director is a stand-alone program that gathers, assembles, formats, and tracks every element of a QuarkXPress document — an offering tailored for newspaper and magazine production. When you drag a story or picture from its Items List (right) onto a document page, the selected item adjusts itself to fit within the free space most efficiently. The Edit Items window (bottom) pinpoints the location and status of every element.

QuarkXPress file and importing and placing all the elements. NAPS also offers Relink ($150), an XTension that can automatically reflow text in the correct order if you move text boxes around.

At $895, Page Director (Managing Editor Software) is just as expensive as QuarkXPress. Designed to automate the creation and layout of newspapers and magazines, Page Director is a stand-alone program that gathers, assembles, formats, and tracks every element of a publication (see Figure 7). Two of Page Director's strengths are the accuracy with which it keeps track of the space required for stories, graphics, and advertisements and the speed with which it lets you dummy a page. Drag a story or picture from the Items List onto a document page, and the selected item will automatically adjust itself to fit within the free space most efficiently. Page Director also offers customizable styles for every item imaginable — from body text to captions to folios. Once you've finished creating a layout in Page Director, a single command feeds the information into QuarkXPress (via an XTension), where the pages are automatically built with all elements correctly positioned and ready for final tweaking. Although the path from Page Director to QuarkXPress is now strictly a one-way street, the Managing Editor developers speak confidently of future two-way interactivity between the programs, using the IAC capabilities of System 7.

In Development. Four other XTensions weren't shipping at press time but offer interesting capabilities. Publication Locking ($250), another NAPS product, will let you lock elements within a QuarkXPress document as well as the source files for text and pictures, thus preventing others from changing them. Baseview Products is developing QEdit, an XTension that will give QuarkXPress a text-editing window much like PageMaker 4.0's story editor. QEdit's price should be less than $100.

Npath will rectify another QuarkXPress omission — table creation and editing — with Tableworks. This $299 XTension, which was due out in July, creates its table cells from QuarkXPress text or picture boxes. It offers numerous features for table configuration, resizing, and duplication, and it supports multipage tables. Tableworks Plus, an $859 professional version shipping in September, will offer beefed-up support for long, complex tables and will allow direct importing of data from database and spreadsheet programs.



For a mere $1,750, you can obtain page signatures for your QuarkXPress documents. DK&A's InPosition, due this summer, will take an existing QuarkXPress document and assemble a new one with pages in the requested signature order and rotation, which eliminates the need for manual stripping.

Sounds. Adding sounds to QuarkXPress documents may seem as necessary as providing the celebrated fish with a bicycle. But just in case the need arises (for training or presentations, perhaps), SoundTack, a $145 XTension from SecondGlance, lets you "tack" sounds to any object on a QuarkXPress page. Sounds can be imported from existing sources, or you can create them if you have a Macintosh with built-in sound support (or MacRecorder). On a more whimsical note, Sounds (a free XTension that's available from on-line services) makes QuarkXPress play sounds in response to certain specified events, such as opening and closing files, saving, printing, or reverting to a previously saved version.

Fancy Borders. One intriguing add-on for Quark that's *not* an XTension is Electronic Border Tape ($99), from Computer Support Professionals. This collection of custom-made frames can be applied to any rectangular text or picture box, and it comes with FrameMover, an application that lets you move frames from one QuarkXPress Data file to another. PostScript purists may look down their noses at QuarkXPress' bit-mapped frame borders, but many of those in Electronic Border Tape are witty and could be quite useful for seasonal or other special-occasion publications.

DesignStudio

There are currently no third-party products specifically geared for Letraset's DesignStudio, although the program does contain hooks for plug-in modules, which Letraset calls Annexes. DesignStudio ships with several Annexes of its own, including Auto Kern Specs, Fonts Used, and Pictures Used. Version 2.0 contains the Separator Annex, which lets you perform four-color separations from within DesignStudio (see Figure 8). The Separator Annex color-separates elements created within DesignStudio as well as imported graphics. The Separator Annex is a more sophisticated offering than QuarkXPress' internal separator; for example, if you have set printing specs (such as screen angles and resolution) within a DesignStudio document, you can opt to have the program override the specs contained in imported EPS images so the artwork looks more consistent with the rest of the document.

Letraset also offers DesignScript ($125), a powerful scripting language (and Annex) that lets you automate the creation of DesignStudio documents — a real boon for database publishing, mail-merge, and report creation. You create DesignScript scripts in a word processor (it helps to have a little programming experience) and then access them in

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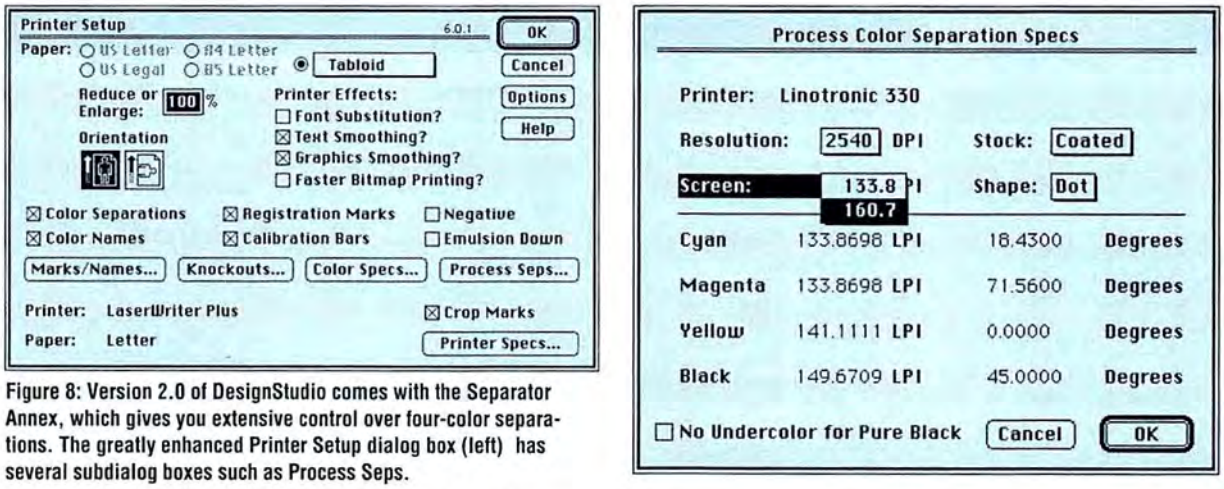


Figure 8: Version 2.0 of DesignStudio comes with the Separator Annex, which gives you extensive control over four-color separations. The greatly enhanced Printer Setup dialog box (left) has several subdialog boxes such as Process Seps.

DesignStudio via the Open Script command. Most of DesignStudio's commands and formatting features are available in DesignScript, enabling you to create and position page elements, format text, and work with graphics.

And More to Come

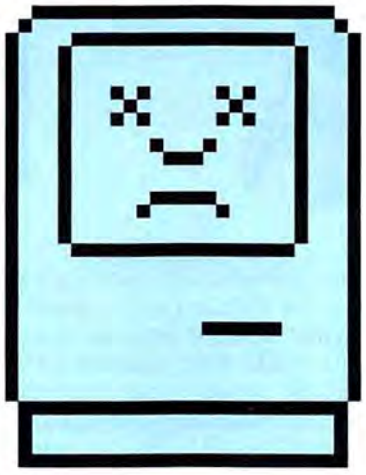
There's no need to despair if DesignStudio, PageMaker, or QuarkXPress can't perform a certain task. The market for third-party enhancements is robust, with add-ons that can do almost everything you want. And in a year, you'll have even *more* options for customizing your page-layout program.

Eric Taub is a free-lance writer and Mac publishing consultant based in New York City.

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PageMaker Dictionaries, $89 each
PageMaker Portfolio Series, $89 each
PrePrint, $495

Baseview Products
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QEdit, price not set

Computer Support Professionals
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DK&A
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PM4 ShortCuts, $10
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Mixing Paint and PostScript

ColorStudio's Shapes annex lets you add PostScript type and objects to a bit-mapped image.

By Janet Ashford

Image-editing programs such as Photoshop and ColorStudio can produce beautiful illustrations, but they can't handle type and other geometric shapes with the same facility that an object-oriented drawing program can. Letraset, however, now offers the Shapes annex for ColorStudio. This add-on module provides a PostScript drawing layer above ColorStudio's bit-mapped image and mask layers.

Shapes' tools and functions are similar to those in a PostScript illustration program, and you can use Shapes to draw original PostScript art, import EPS graphics, or set type. You can move, resize, and layer objects without disturbing the underlying bit-mapped image. When you're finished, ColorStudio renders Shapes' PostScript layer to the image layer with automatic anti-aliasing (smoothing of edges to reduce the stair-stepped look).

Jeff Brice, a Seattle-based computer illustrator, used ColorStudio and Shapes to add PostScript objects and type to a CD cover for jazz musician Kenny Blake, who records for Heads Up International. Illustrator Don Baker, also of Seattle, created the type elements in FreeHand.

Graphic designer Janet Ashford is a contributing editor to *Step-by-Step Electronic Design*.



The compact-disc cover for Kenny Blake's *Interior Design* album features a scanned silhouetted photo, a background blend, PostScript type, and geometric shapes in semitransparent colors that help develop the cover's theme of "interior design."

1 Opening a Scanned Photo



A color photo of Kenny Blake (taken by John Fries, of Pittsburgh) is scanned at 300 dpi, saved as a color TIFF image, and opened in ColorStudio's Color & Mask layer. In this combined layer, changes made to the image in the color layer are echoed in the mask layer (which can be switched on to protect selected parts of the color layer from editing).

2 Silhouetting the Figure



The lasso and paintbrush tools are used to select and delete unwanted parts of the background. Brice then uses the Color Correction palette to increase the image contrast, to add warmth to flesh tones, and to produce blue highlights in the tuxedo. The Sharpen More filter is applied to the image to bring out additional details.

3 Viewing the Mask



When a TIFF image is opened in the Color & Mask layer, the mask layer is filled with solid black. As parts of the image are deleted from the color layer (see Figure 2), these areas become white in the mask layer, creating a black silhouette that can be used as a mask for the figure. Conversely, the white area can be used as a mask to protect the background.

4 Adding a Graduated Fill



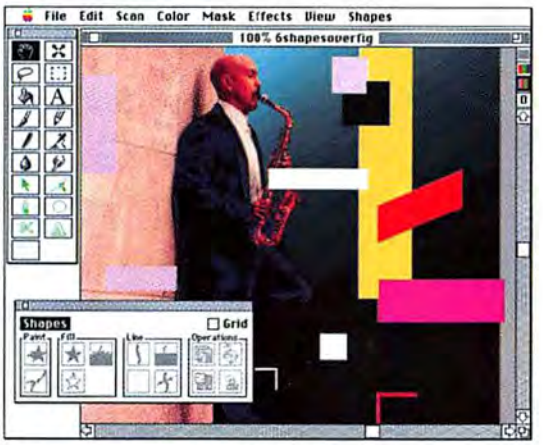
An angled, linear fill from teal to black is created, with the Paintbucket Options dialog box, which contains specifications for the colors and orientation of the blend. Using the paintbucket tool, Brice pours the graduated fill into a selected area to the right of the figure.

5 Merging the Fill and Figure



Brice pastes the previously copied silhouette (Figure 2) back into the image, placing the silhouette on top of the blend. To prevent the white area around the silhouette from obliterating the blend, the mask layer (Figure 3) is activated by the Mask White command. This turns the white portion of the mask layer into a mask, protecting whatever it covers — in this case, the blend — from being changed.

6 Creating PostScript Shapes



Moving to the Shapes layer, Brice draws several rectangles and layers them over one another, using the Bring to Front and Send to Back commands. (The color layer is still visible behind the Shapes layer.) A color and level of transparency is assigned to each rectangle, and then the Shapes layer is merged with the color layer by a click on the Render Shapes icon in the Shapes window. (Transparency effects are not visible on-screen until the Shapes layer is rendered.) The rendering process converts the PostScript objects into anti-aliased, bit-mapped objects with the same resolution as the underlying image.

7 Applying a Border and Texture



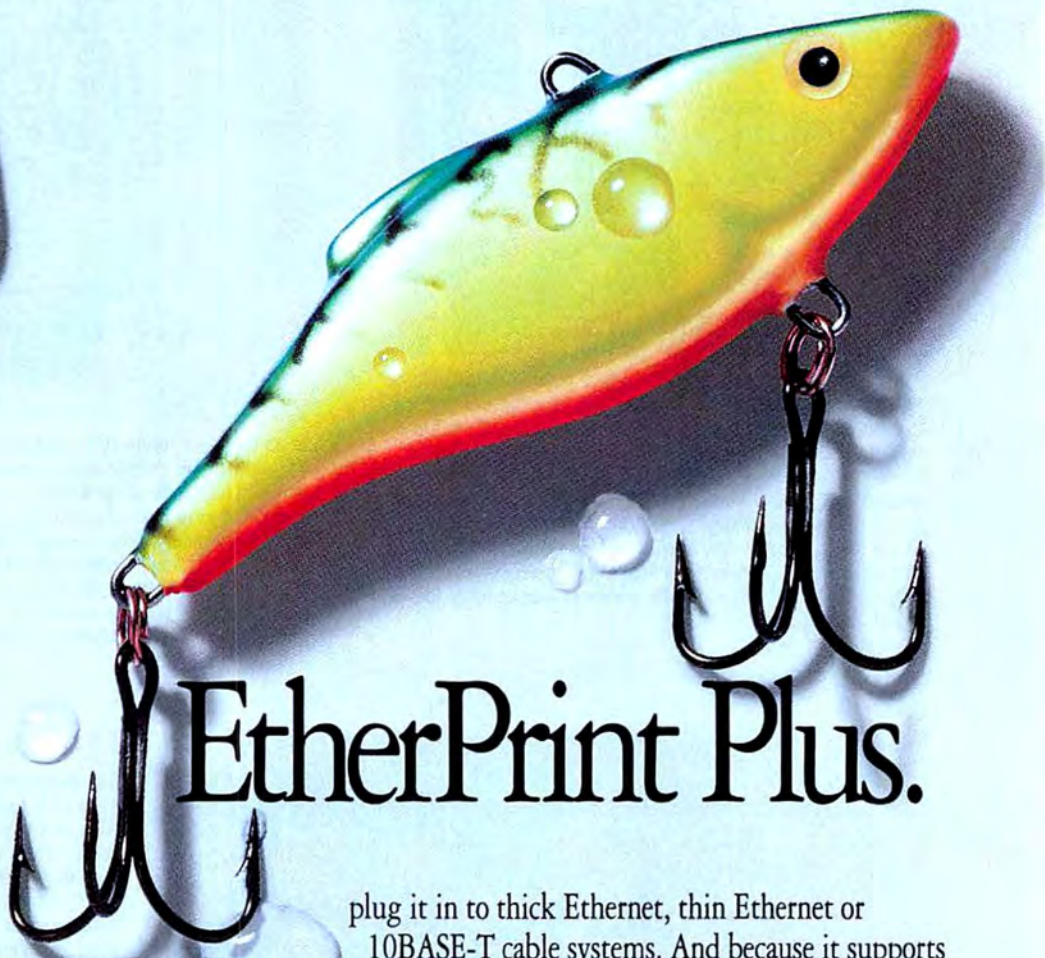
Brice creates a frame by pasting the image into the center of a slightly larger graphic filled with solid purple. Using the fingertip tool at 80-percent transparency, he smudges the border between the image and the purple background. To make the image look as if it were printed on rough paper, Brice uses the Mask Texture and Add Noise effects to create a texture in the mask layer. The Relief effect is used to emboss texture onto the color layer. (The Mask Texture and Relief effects are new filters available in ColorStudio 1.5.)



8 Adding the Type

The text elements are produced and colored in FreeHand, saved as EPS files, and imported into the Shapes layer, where they're positioned over the image and rendered. The imported type for Interior Design is duplicated, colored black, offset to the bottom right, and sent behind the original to produce a drop shadow. (Type can also be created directly in the Shapes layer, with the text tool.) The type elements are added last so that their crisp anti-aliased outlines are not affected by the applied texture. The finished image is color-separated in ColorStudio and output to film at a resolution of 300 dpi.

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By Henry Bortman



The stylus: Back in style. NCR is the first company to ship a computer that can run GO Corp.'s PenPoint operating system. The NCR 3125 (boring name!) is based on Intel's 386 SL microprocessor. Letter-sized, it weighs in at 3.6 pounds (3.9 with optional 20-megabyte hard disk). RAM: 2 megabytes each of DRAM and Flash EPROM, both expandable to 10 megabytes. Screen: 640 x 480 pixels, 16 shades of gray. Ports: serial (with LocalTalk support), parallel, keyboard, and VGA (for connecting an external monitor). An optional docking station has two AT bus slots, additional hard-disk and floppy-disk-drive capability, and a mouse port. (The 3125 will also run DOS, Windows, and PenWindows.) Prices start at around $4,000; shipping now.

Talking Big Blue: Apple has expanded its IBM-mainframe-connectivity offerings with two new software packages: SNA•ps Gateway and SNA•ps 3270. The Gateway runs on a Mac outfitted with Apple's token-ring, twinaxial/coaxial, or serial NuBus card. Connect the Gateway machine to an AppleTalk network, and any Mac on the network (provided it's running the SNA•ps 3270 software) can establish a terminal session with an IBM System/370 or System/390 mainframe or an AS400 midrange computer. SNA•ps Gateway pricing: for 8 sessions, $1,495; for 64 sessions, $4,495. SNA•ps 3270 pricing: for the Gateway node, $125; for network-based clients, $345 per node. Also — it's about time — Apple APIs for 3270- and APPC-type connections.

Meanwhile, Avatar is now shipping version 4.0 of its MacMainFrame client and gateway software, which supports System 7's balloon help and publish-and-subscribe. MacMainFrame comes bundled with Avatar's coax, token-ring, and SDLC cards. Prices range from $995 to $6,495, depending on the card and software. ❇ DCA is offering MacIRMA Graphics 2.0.0 ($195), which lets Macs emulate IBM 3179G or 3192G graphics terminals, and MacIRMA Workstation 2.0.0 ($295), which includes DataViz file-translation technology.

Speaking of translations: Ever wished you could double-click on a WordPerfect PC file icon and have the file automatically be translated and opened in MacWrite? Now you can. Software Bridge/Mac provides translators between 25



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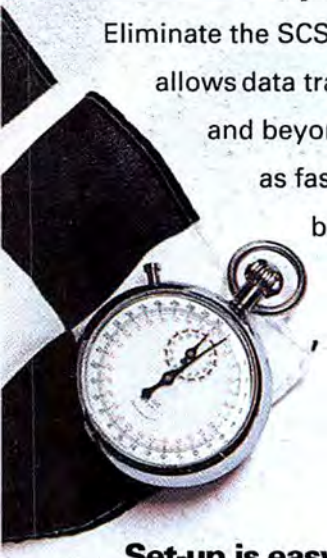
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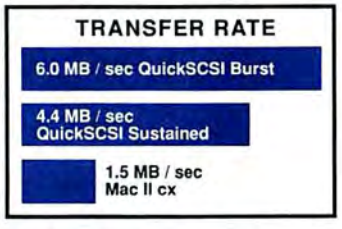
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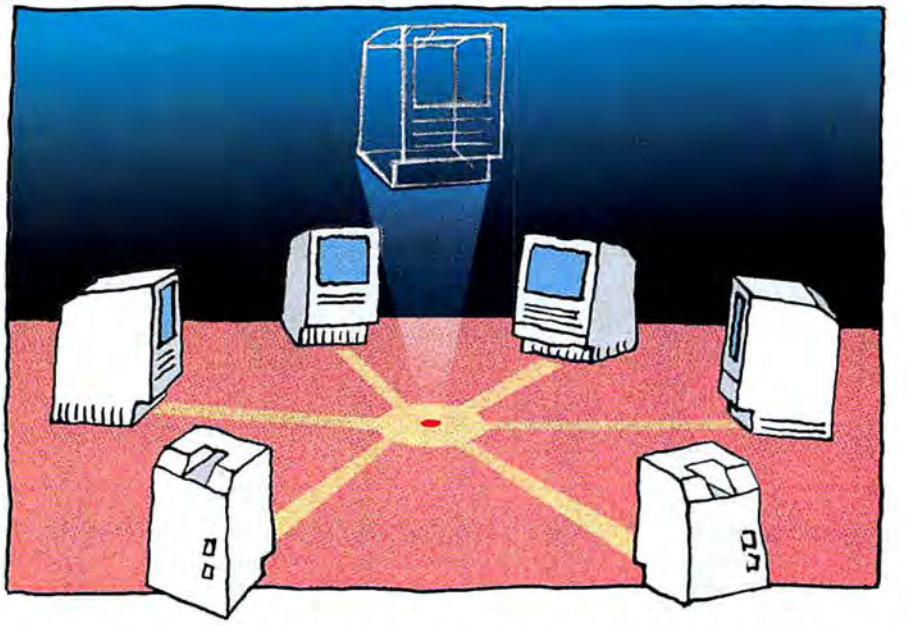
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The DataClub Difference

DataClub is a distributed file server with the look and feel of a dedicated server. Can it compete with the file-sharing capabilities built in to System 7?

By John Battelle



If your Mac is part of a network, chances are you exchange files with other users. File sharing ranks right up there with printing and electronic mail as one of the most common reasons for using a Mac network. Until recently, however, if you wanted to trade files with other users, you had to invest in a commercial product such as AppleShare, from Apple, or MacTOPS, from Sitka. Now Apple has made this task easier — and cheaper — by building file-sharing capabilities in to System 7.

System 7's file-sharing strategy is an example of a *distributed* — or peer-to-peer — server, meaning that each user can be both a *server* (provider) and a *client* (recipient) for shared information (see Figure 1). You share the contents of your hard disk with others (your peers) by specifying which folders are to be shared as server *volumes*. In turn, you (as a client) can directly access information that's shared by other users on the network, by mounting their volumes — that is, by selecting the shared volume in the Chooser, which causes it to appear on your desktop. The client portion of file sharing is provided by the AppleShare software that comes with your System software. Select it in the Chooser, and you'll see all the volumes shared by other users.

In contrast, a *dedicated file server* such as the AppleShare File Server stores all shared files in a single location. Again, AppleShare's client portion is part of the Mac's System software, but the server function — which stores and presents shared data — is managed by separate software on a dedicated machine. Your own hard disks are never accessed by anyone else, and you mount volumes only from the dedicated server. This spares your Mac from the processing load of serving data to other users and provides a unified view of shared data. But you can't directly send files to other users, and you must pay for both the dedicated machine and the AppleShare File Server software.

Even before System 7's file sharing appeared, users welcomed the idea of being able to exchange files among computers without dedicating an entire machine to the task. The first third-party distributed server was MacTOPS, which has been followed in the past two years by four other peer-to-peer (also called point-to-point) products: allShare (EveryWare), DataClub (International Business Software), EasyShare (Symmetry Software), and Personal Server Network (Information Presentation Technologies).

All of these products (except MacTOPS) have one thing in common with both AppleShare and System 7's file sharing — they use the client/server metaphor specified by Apple's AFP (AppleTalk Filing Protocol). MacTOPS has its own proprietary file-sharing protocol. AFP provides a standard interface — the AppleShare client software — and a common

Figure 1: Distributed Versus Dedicated Server

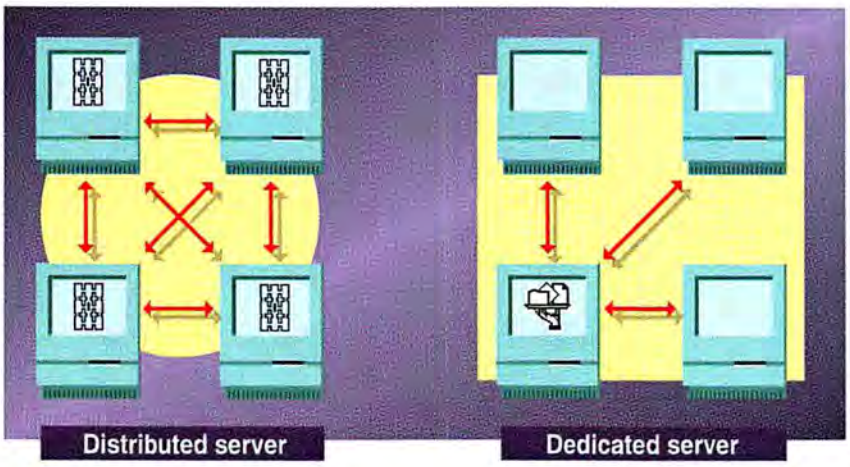


Figure 1: With a distributed (peer-to-peer) server such as DataClub, each user can be both a server and a client for shared information and files can be sent directly between any two Macs on the network. In contrast, a dedicated file server such as AppleShare stores all shared files in a single location on a dedicated machine; to move a file from one user to another, you must transfer it through the central server.

set of access privileges (so you can decide who uses shared files). Thus, no matter what type of AFP-compliant server you use — AppleShare, DataClub, or System 7's file sharing — you use the same dialog box to specify access privileges and you access shared volumes in the Chooser by selecting the AppleShare client icon.

Because allShare, DataClub, EasyShare, and PSN all use the AFP protocol, they have more similarities than differences — although they do vary in price, performance, and features (see "Sharing without AppleShare," July '90, page 205). Although some of these products will eventually bow to insurmountable competition from System 7's free file-sharing capabilities, at least one — DataClub — offers features that make it a unique contender in the post-7 world and a possible competitor to the AppleShare dedicated server.

A Unique Metaphor

Although this is not a comparative review, DataClub invites comparison, because it is essentially a peer-to-peer solution that looks and feels like a dedicated AppleShare server. IBS calls DataClub a virtual server, because — as with the AppleShare File Server — you see only one volume icon. DataClub takes shared folders from each participating Mac's hard disk and displays this combined storage to the user as a single, shared volume. With standard peer-to-peer servers, you must mount three volumes to see folders that are shared from three different machines. With DataClub, the same three shared folders appear as part of a single volume.

This ability to separate the logical location of a folder (where it appears on the DataClub server's file-directory structure) from its physical location (the disk on which it actually is stored) is a dramatic first in Mac file sharing.

DataClub also provides a mechanism that lets you change the physical location of a folder from one user's machine to another without altering where it appears to be (see Figure 2). With other server products, working on files stored on the server ties up both the server and the network. DataClub lets you avoid this performance slowdown by moving a DataClub folder to your local hard disk. It still appears to all users to live in the same place on the DataClub volume, but the network is affected only while you're moving the folder. This trick can also be handy if, for example, you want to turn off your computer but still need to share a folder with coworkers. Simply move the folder to another DataClub user's hard disk; no one using the enclosed files will notice the change in physical location.

Each DataClub node is responsible for a portion of the processing power necessary to maintain the illusion of a unified server. As we discovered during testing, DataClub has pulled off this gymnastic feat of engineering with only a few glitches. In this review, we examine version 1.1.1 of DataClub. At press time, IBS planned an August release for version 2.0, a revision that fully supports System 7 and addresses several of the problems we found in version 1.1.1.

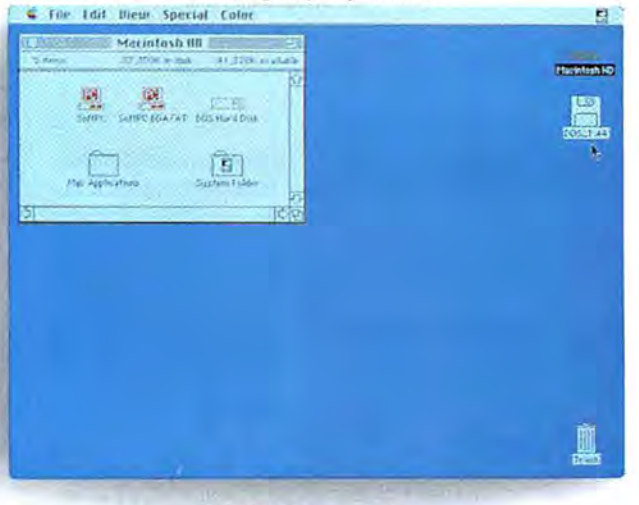
Installation and Setup

The DataClub package includes three floppies: an installation disk, a program disk, and an administration disk. DataClub requires System 6, and one server can support up to 76 users. (Version 1.1.1 does not work with System 7, although System 7 users can use AppleShare client software to access files on machines running DataClub under System 6.) The program is quite simple to set up. The installer, which must be the startup disk during installation, steps you through the setup procedure. In the MacUser Labs NetWorkShop, we created an Ethernet network consisting of two Mac IIsi's and one SE. During installation, however, we ran into two major flaws.

The first, which the company plans to fix in version 2.0, is that DataClub doesn't run on an AppleTalk Phase 2 network unless a router is present. AppleTalk Phase 2 is Apple's latest version of network-addressing software for EtherTalk and TokenTalk networks. It enables network managers to assign individual computers to different AppleTalk zones even if all the computers are physically connected to the same network-cable segment (zones determine how shared resources, such as file servers and network printers, are grouped in the Chooser).

In what looks like a well-intentioned

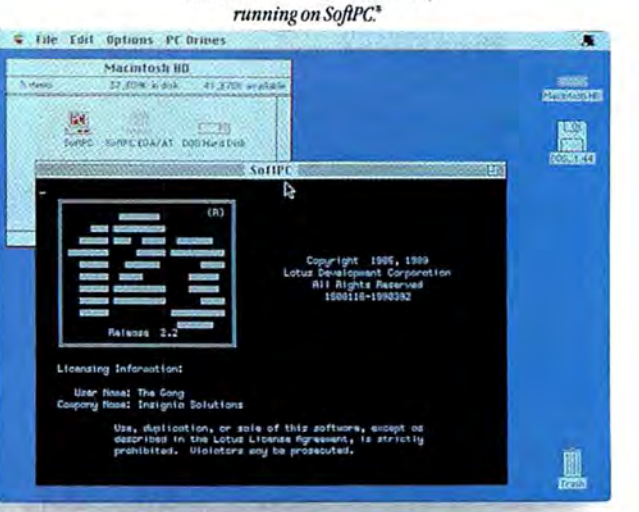
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but shortsighted move on IBS' part, DataClub will not work on a Phase 2 network if it senses that there is no router present to ensure the integrity of Phase 2's software-configured zones. The reason: DataClub combines the storage resources of *all* the participating nodes in a zone, so only one DataClub server can exist per zone. DataClub assumes that the absence of a router on the network means that the router has failed.

This restriction makes a certain amount of sense: If a Phase 2 router did fail and the software-generated zones were lost, all the DataClub servers from the various zones would combine into a single server and data could be corrupted. That is, it makes sense if you *have* multiple zones. Our test network, however, contained only three Macs, and although we were using Phase 2 drivers with our Asanté Ethernet cards, we had no need for more than one zone — or for a router. But DataClub didn't care. It wouldn't let us complete the installation.

To top it off, the alert message explaining our dilemma didn't specifically mention Phase 2; instead, it informed us that "DataClub cannot be started on an extended AppleTalk network without an AppleTalk router." At this point, we tried to consult the DataClub manuals' indexes under *Ethernet* and *extended network*, but DataClub's manuals are not indexed and they lack any discussion of AppleTalk Phase 2. This illustrated DataClub's second major flaw: In general, we found its manuals to be slim on troubleshooting and optimization tips, although (again) the company plans to add a chapter specifically devoted to these topics in version 2.0.

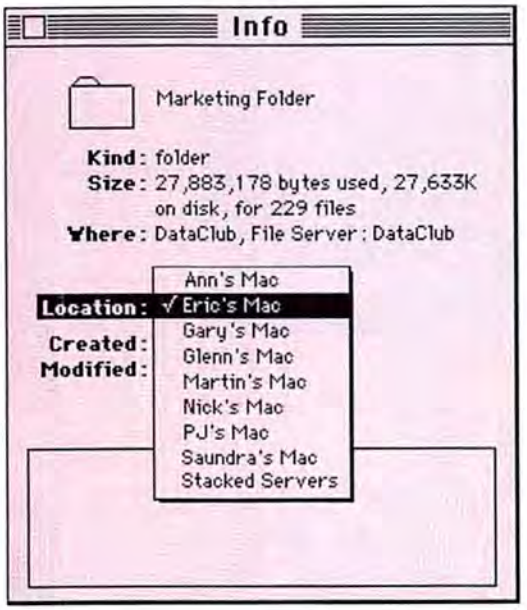


Figure 2: DataClub adds a Location pop-up menu to the Finder's Get Info dialog box. Using this menu, you can move a DataClub folder from one user's machine to another while maintaining its position in the DataClub server's file-directory structure.

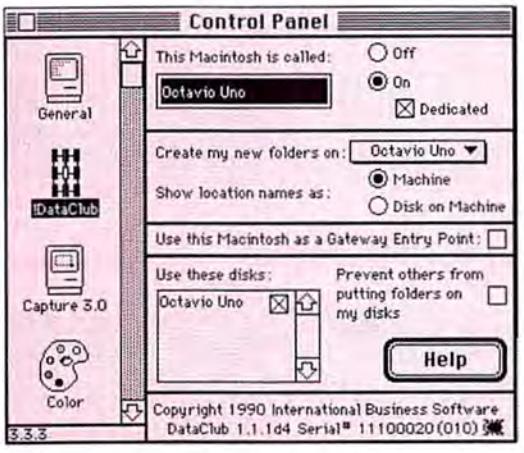


Figure 3: Users configure the DataClub setup for their individual Macs through a control panel. Options include choosing the Mac's DataClub name, deciding where folders will be stored, and dedicating the machine to file serving.

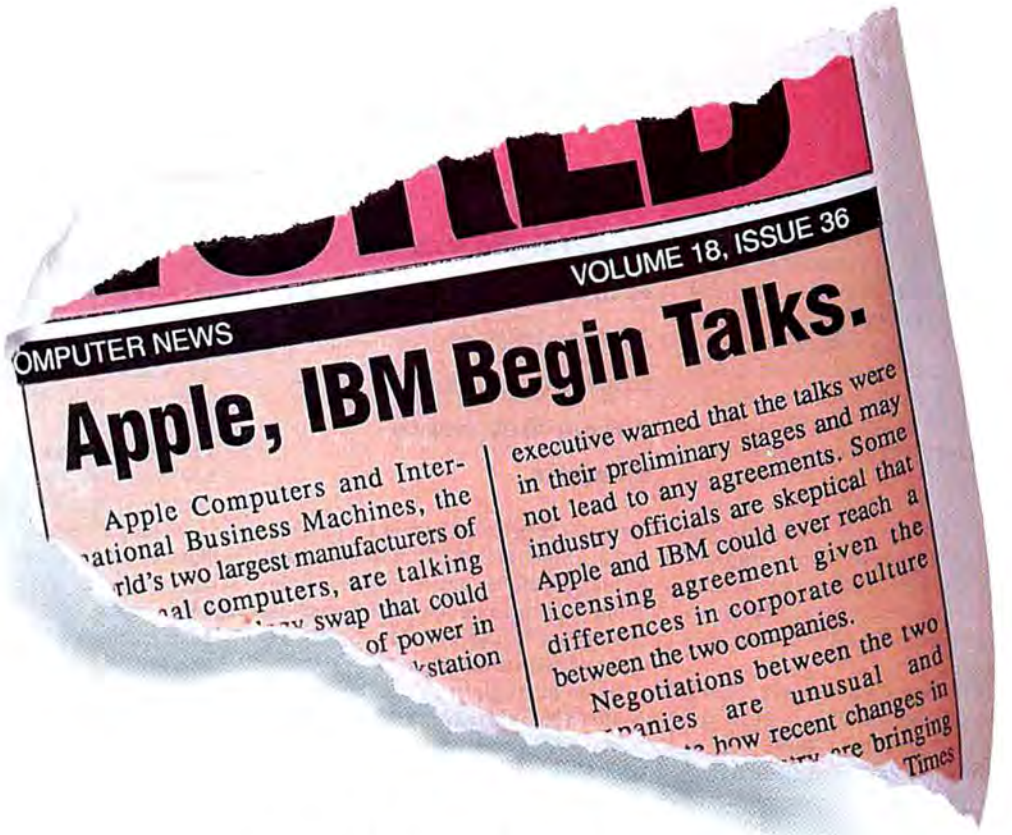
Configuration

We installed a router and logged on to the DataClub server. Once the software has been installed, accessing the DataClub server is as easy as selecting the Chooser and clicking on the AppleShare icon. The DataClub server immediately pops up with Guest selected in the connection dialog box. To log on as a registered user, you must first have a user account with its attendant password, which is created by DataClub's administration program.

The administration program can be run from any DataClub node, a feature that will be appreciated by any network administrator who has had to walk down the hall — or drive across town — to a dedicated server to do system maintenance. The password-protected program lets an administrator create groups, add and delete users, and show a list of DataClub folders and owners. Network administrators will also appreciate the simplicity of backing up the single-logical-volume DataClub server. Restoring after a crash, however, is somewhat complicated — it requires several steps, including using the administration program to determine which DataClub folders need to be restored to which Macs.

Users configure DataClub through a control panel that lets them choose the Mac's DataClub name, turn DataClub on or off, and select the hard disk on which newly created folders will be stored (see Figure 3). DataClub's default storage location for folders is your own hard disk, but a pop-up menu lets you designate any other node on the network as the original storage location. Besides listing all other possible nodes, the pop-up menu also contains an Anywhere setting, which allows DataClub to decide where best to store a folder and its contents.

The DataClub control panel includes a check box for dedicating the Mac to DataClub file serving, which the manual suggests be done if the file server will be used primarily for multiuser databases. The control panel also provides a check box for preventing other users from storing files and folders on your local disks, but it doesn't offer a mechanism for dedicating only a certain percentage of a local disk to network activities. We feel that this would be a useful feature, as peer-to-peer networks can often consume a



Big Deal.

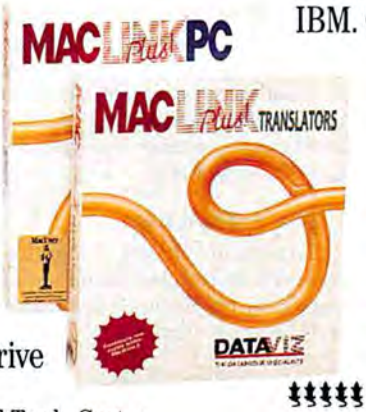
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disproportionate amount of your local hard disk. IBS suggests using partitioning software to restrict the amount of hard-disk space DataClub occupies, but it doesn't include such a utility with the program.

Because the folder is the basic unit of distribution, DataClub supports all nine levels of AFP's access privileges for folders, which gives the creator of a folder the means to decide who can view and change a folder or its contents. As with AppleShare, the owner of a folder chooses these settings, using the Access Privileges DA or the Get Privileges command from the Finder's File menu (this approach may change in version 2.0, which is System 7-compatible).

The control panel also has a check box that enables the Mac to become a gateway entry point. If you, as a client, want to access a DataClub server on a zone different from your own, you must have one machine in your zone designated as a gateway to other zones. Otherwise, you won't be able to see DataClub servers in zones other than your own. This feature seems unnatural and certainly not in keeping with AppleShare's philosophy.

The gateway entry point must also be used to provide access to a DataClub server to a computer that's running AppleShare client software other than DataClub. If you wanted to access a DataClub server from an IBM PC, for example, it would have to be running AppleShare PC (AppleShare software for DOS machines) and your server would have to have one machine designated as a gateway entry point. If you wanted to access the DataClub server from a non-DataClub Mac, you would also need a DataClub machine designated as a gateway entry point. Non-DataClub clients can't provide storage resources for the DataClub server.

Should a Mac storing DataClub files crash or be turned off, the files on that machine will automatically be dimmed in the server windows of other users until the machine is restored to the network. DataClub constantly updates its location directory, so even when a Mac leaves the network, each node "remembers" where the files were.

Performance

For the most part, DataClub delivers on its promises, copying files back and forth between nodes with a speed close to that of the AppleShare File Server. Because DataClub is a peer-to-peer server, however, it suffers considerably if you try to copy a file to or from a busy machine. Even worse, if the user of that machine is performing repetitive actions that require the mouse button to be held down (such as desktop publishing or CAD), you may be in for a long, silent wait.

Because file sharing is now part of System 7, peer-to-peer products must have unique features to compete.

When this happens, DataClub returns — after a period in which nothing happens at all — with a message that simply states, "DataClub can't reach the location storing that file or folder just now, but will continue to try." This message is annoyingly vague, and it offers no Cancel button or information about which node is tying up your network operation.

IBS has promised to fix the problem in version 2.0 by identifying the mouse-happy Mac, but we would still like to see a Cancel button built in to this dialog box to prevent an office full of employees shouting "Get your finger off the mouse!" at each other. If you are mousing around quite a bit, we suggest that you become a DataClub client only — that is, check the "Prevent others from putting folders on my disks" box in DataClub's control panel and don't store files that other users might need. This scenario undermines a major advantage of DataClub, but it should be necessary only in extreme cases.

On the side of the user whose disk is being accessed, however, we found DataClub to be very forgiving. We hardly noticed performance drags as DataClub lifted files from our disks. We did find DataClub to be somewhat memory-hungry — our system-memory overhead shot up by as much as 500K once we'd installed it. The company recommends at least 2 megabytes of RAM, but when loaded with a reasonable number of INITs, our 2-megabyte machine could not run both DataClub and a memory-intensive program such as QuarkXPress or HyperCard.

The Bottom Line

Because file sharing is now part of System 7, peer-to-peer products will have to lay claim to a unique feature to compete. A file-sharing market will still exist for users interested in running System 6, and the makers of allShare and EasyShare have said that they don't plan to upgrade their products for System 7. IPT plans to focus PSN on sharing files between Macs and UNIX-based servers; likewise, Sitka will focus on MacTOPS' cross-platform strengths.

For Mac-only networks, IBS' DataClub is best positioned to survive the transition to System 7. Its unique metaphor — distributed file sharing that appears as a single volume — offers advantages not available with System 7's file sharing. Unfortunately, version 1.1.1 doesn't run under System 7, although System 7 users can be clients of DataClub servers on System 6 machines by going through a gateway entry point. Version 2.0 of DataClub, due out this August, will be fully compatible with System 7 and will support the server/client relationship in System 6 and System 7 environments.

In summary, DataClub is an elegant extension of the peer-to-peer-server approach. Version 1.1.1 still contains significant problems, including incomplete manuals and an inability to run on an AppleTalk Phase 2 network that doesn't have a router installed. However, the company plans to address these flaws in version 2.0, which purportedly will be five times as fast as the current release (upgrades to 2.0 will be free). We would like to see some added features, including the option of partitioning your hard disk between server and local use, but all in all, DataClub works as advertised and may even give Apple's dedicated AppleShare File Server a run for its money.

John Battelle is a free-lance journalist in the San Francisco Bay Area.

Get Info

DataClub

★★★½

Published by: International Business Software, 1270 Oakmead Parkway, Suite 314, Sunnyvale, CA 94086; (800) 733-2822 or (408) 522-8000.

Version: 1.1.1.

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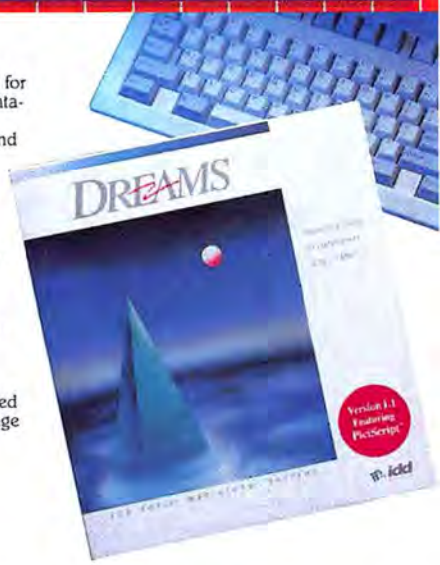
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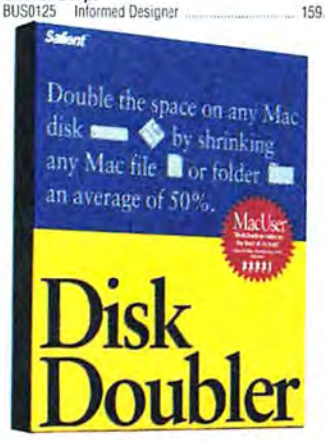
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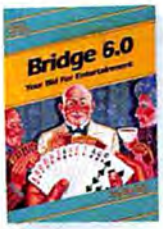
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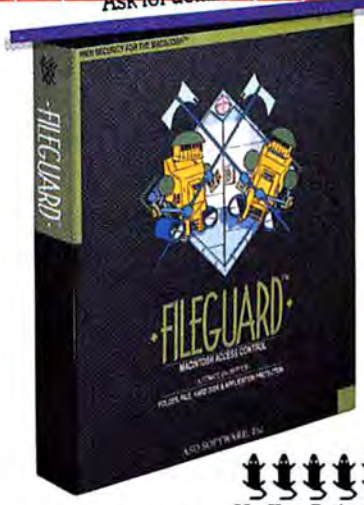
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❼GRA0104 Dreams 1.1 419.
Letraset
❼GRA0151 ColorStudio 599.
DTP0019 ImageStudio 1.5 139.
MacroMind
❼GRA0140 MacroMind Director 629.
❼**Metro Image Base (Full line available)**
GRA0169 Newsletter Maker 85.
Paracomp
GRA0235 FilmMaker 435.
❼GRA0233 Swivel 3D Professional 435.
❼GRA0234 SwivelArt 81.



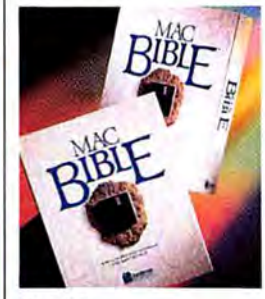
HyperGlot Lanaguage Software (French)
❼ Extensive use of native speakers with the clarity and tone quality only digitized sound produces! French to English, English to French. Helps you remember all those things you learned in French Class. Perfect for the world traveler, beginning student, or anyone needing to become more fluent. Products are also available in Spanish, Japanese, Chinese, Russian, German, Italian and English. No matter which language you want to learn, HyperGlot has products to assist you. ***French Tense Tutor*** **EDU0179 $39.** ***French Word Torture*** **EDU0183 $35.** ***Learn to Speak French*** **EDU0189 $69.**

Baseline Publishing
GRA0242 Color MacCHEESE 56.
GRA0239 Master Color 99.
GRA0238 Master Paint 73.
Bright Star Tech, Inc.
❼GRA0161 interFACE 249.
Claris
❼CAD0029 ClarisCAD 2.0 645.
❼GRA0271 MacDraw Pro 289.
❼GRA0117 MacPaint 2.0 89.
Creative Software
GRA0240 Easy Color Paint 2.0 47.
Deneba Software
GRA0075 Canvas 2.1 189.
GRA0187 UltraPaint 125.

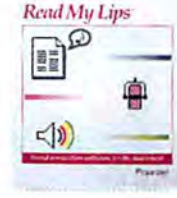
DaynaPORT
(Dayna Communications, Inc.)
DaynaPORT adapters provide Ethernet speed and connectivity for Macintosh computers on 10BASE-T, fiber optic, thick or thin Ethernet cables. New DaynaPORT E/Z offers the easiest Ethernet connection for the Plus, Classic, SE and Portable. This external connector provides a high-speed link to Ethernet through the Macintosh printer port. It is also an excellent Ethernet connector for Macintosh LC and IIsi models that have used up their card slot. **NET0125 $285.**



Microphone II 4.0
❼ Ideal for International telecommunications. Praised for its ease of use and advanced scripting language, Microphone II 4.0 now contains faster script execution, screen speed, file transfers and new interface design tools. Supports ZMODEM transfer protocol and can operate modems at any speed from 50 to 57,600 baud. **COM0094 $215.**



MacBible -
New International Version
❼ Revolutionize the way you study the Scriptures. Includes a flexible word-and-phrase search mode, a verse mode for displaying any range of verses, and a count mode for showing statistical information about words. **BOK0020 $79.**



Read My Lips
❼ Attach sounds to documents you create using popular word processors, desktop publishing, and presentation software. Use pre-recorded sounds or record your own. Both the built-in microphones of the new Macs as well as MacRecorder are supported. **UTI0211 $75.**



More After Dark
(Berkeley Systems)
It's M.A.D.! It's More After Dark—Over 25 incredible new displays for After Dark, the Ultimate Screen Saver. Features contest winners Mowin' Man, Tunnel, GraphStat, and many beautiful new fish! Kittens, Art Museum, and Lunatic Fringe game module help save your screen from phosphor burn-in. (Requires After Dark software). **UTI0230 $25.**

After Dark 2.0
After Dark 2.0 displays over 35 screen savers including classics Flying Toasters and Fish! Includes sound, password protection, logo and message display. **UTI0119 $29.**
Buy both and save! UTI0231 $45.



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American English Writing Guide (Nova Development)
This unique desk accessory is a complete reference to style, punctuation, and better writing with rules and examples for a variety of writing topics, from capitalization to punctuation and spelling to bibliographies. **WRD0043 $39.**

American Handbook of Business Letters
Nearly 300 ready-made business letters for every occasion. From congratulating business associates to collecting on past due accounts. **WRD0044 $32.**

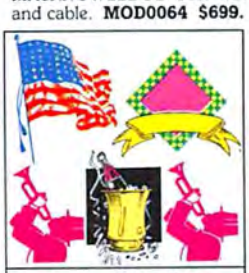
Instant Library of Quotations
This best selling writing tool offers more that 5000 contemporary, literary, and historical quotations on over 600 topics, plus the capability to add your own. **WRD0045 $32.**

ClickArt Color (T/Maker)
ClickArt Color Graphics for Presentations is a portfolio of more than 250 high-quality, full color images created especially for presentation. The images have been designed to deliver quick, clean, visual impact against the colored backgrounds typically used in presentations. The subject categories are appropriate for any type of business presentation and include time and money icons, people in office-related situations, maps, computers, flags, backgrounds, and logos, to name a few. **GRA0272 $99.**





ProModem Ultima
❼ Only 14,400 bps modem with Fax! Supports the new V.32bis standard for 14,400 transmissions plus V.42bis/MNP-5 compression and error correction. Also, a 9600 bps Send/Receive Fax with feature-filled Maxfax software. Includes MAcKNOWLEDGE software and cable. **MOD0064 $699.**



NewsletterMaker Vol.1

Praxitel
❼UTI0211 Read My Lips 75.
Silicon Beach
GRA0092 Digital Darkroom 2.0 259.
GRA0131 Super 3D 2.1 329.
HYP0027 SuperCard 1.5 199.
GRA0112 SuperPaint 2.0 135.
Solutions, Inc.
DAC0002 SmartScrap & The Clipper 2.01 56.
Strata
GRA0274 StrataVision 3D 2.0 469.
Strategic Mapping, Inc.
GRA0227 Atlas MapMaker 4.5 369.
SuperMac
❼GRA0253 PixelPaint 2.1 159.
❼GRA0249 PixelPaint Professional 2.0 519.

Applied Engineering
❼INP0148 Quadralink 209.
Articulate Systems
INP0160 Voice Navigator II 559.
CH Products
INP0121 RollerMouse ADB 75.
Curtis
INP0141 MVP Mouse 89.
Datadesk International
INP0174 Mac101E Keyboard 129.
Digital Vision, Inc.
GRA0145 Computer Eyes B & W 199.
GRA0154 Computer Eyes For Mac-Color 349.
ICD
INP0095 Graflex 82.
Kensington
INP0059 Turbo Mouse 109.



Business Sense 1.4 (Inman) Critically acclaimed, all time favorite Macintosh accounting package for small business. Business Sense was designed exclusively for the Mac and is easy to learn and use. All the Major accounting functions such as GL, AR, AP, Payroll, and Sales Invoicing are integrated on a single disk. **FIN0013 $129.**

Business Plan Toolkit
If you need to write a business plan you need Business Plan Toolkit. MacUser gave the program 4.5 mice. Includes a sample plan on disk/paper complete with text, tables and graphs. Financial templates include all statements, forecasts, personnel plan and ratios. **FIN0116 $99.**

MEMORY UPGRADES & ACCELERATORS

Connectix
DRI0385 MC73 159.
UTI0222 Mode32 99.
UTI0144 Virtual 030 2.0 UM3 113.
DRI0185 Virtual 2.0 PMMU 188.
Daystar Digital
❼DRI0224 64K FastCache IIci 279.
❼DRI0288 40 MHz PowerCache (IIci) 959.
❼DRI0290 50 MHz PowerCache (IIci) 1699.
PowerCard 030 (II,IIx,IIcx) starting at 1495.
Dove
❼DRI0130 MaraThon 030 (MacII) 599.
❼DRI0198 MaraThon 030 - (Mac SE) 399.
❼DRI0197 MaraThon 030 - (MacPlus) 399.
❼DRI0152 MaraThon 030X (MacIIx) 599.
❼DRI0151 MaraThon 030-SE/030 599.
❼DRI0380 Marathon Racer For Mac II 1079.
❼DRI0378 Marathon Racer For Mac Plus 599.
❼DRI0379 Marathon Racer For Mac SE 599.
Impag
CHP0043 512K Video SIMM Upgrade 149.
Micron Technology
DRI0321 PicturePress Card (Xceed ICDP-II) 745.
MicroTech International, Inc.
CHP0025 Mac Classic 1 Meg Upgrade 79.
CHP0026 Mac Classic 3 Meg Upgrade 179.
DRI0315 Mac Classic Upgrade Kit 20-1 399.
DRI0317 Mac Classic Upgrade Kit 40-1 499.
DRI0318 Mac Classic Upgrade Kit 40-3 575.
PowerUser™
❼CHP0013 1 Meg Simm 100ns PowerUser 59.
Total Systems
❼DRI0295 Mercury 16MHz 68030 - Plus 519.
❼DRI0297 Mercury 16MHz 68030 - SE 389.
❼DRI0299 Mercury SCSI Module - Plus 209.
DRI0382 Enterprise 882LC 20MHz 259.
DRI0383 Enterprise ULC Upgrade Kit 20 MHz 265.

Metro ImageBase Electronic Clip Art
❼ Communicate more effectively with fabulous art and graphics from the world's largest publisher of clip art. Each of the 18 ImageBase packages contains at least 100 topic-related images drawn by professional artists. **GRA0169 $85.**



Offline 2.0
The complete disk management system isn't just for floppies anymore! Catalogs hard drives, Syquest cartridges, even CD ROMs. Quick and flexible search engine lets you find any file on any disk, even if it's not mounted. Prints disk labels and exports to other applications. **UTI0207 $65.**

Tactic
GRA0110 ArtClips 1st Edition 49.
GRA0160 ArtClips 2nd Edition 65.
T/Maker Co.
GRA0039 ClickArt Business Image 32.
GRA0272 ClickArt Color 99.
GRA0088 ClickArt EPS Illustrations 82.
Zedcor
❼GRA0199 DeskPaint 3.3 113.

HARDWARE & PERIPHERALS

Caere
INP0143 Typist 479.
CoStar
INP0091 LabelWriter 185.
Epson
INP0167 Epson EPL-7500 Laser Printer 2599.
INP0168 Epson EPL-7000 Laser Printer 999.
INP0173 Epson PostScript Kit 1599.
Seikosha
INP0041 Seikosha SP 2000 AP Printer 235.
Sharp
COMP007 Wizard OZ 7000 (32KRam) 229.
COMP018 Wizard OZ 7200 (64KRam) 255.
COMP019 Wizard Oz 8000 (64 KRam) 329.
COMP023 Wizard Oz 8200 (128KRam) 399.
ThunderWare
INP0116 LightningScan 400 385.
INP0007 ThunderScan Plus 199.

INPUT & OUTPUT

Abaton
❼INP0157 Scan 300/Color 1899.
INP0164 LaserScript Printer LX 1759.
INP0060 Turbo Mouse ADB (SE or II) 109.
Key Tronic
❼INP0156 MacPro Plus 145.
Koala
INP0127 MacVision 3.0 269.
Kraft
INP0094 Kraft ADB Trackball 79.
Microspeed
INP0126 MacTRAC ADB 75.
INP0140 MacTRAC DB9 62.
Microtek
❼INP0180 Microtek ScanMaker 600ZS 1699.
❼INP0176 ScanMaker 1850 S 2459.
❼INP0162 TrueLaser Printer 2019.
MicroTouch
❼INP0084 The UnMouse 189.
Mouse Systems
❼INP0132 Little Mouse ADB 75.
❼INP0134 Trackball / ADB 69.
Sophisticated Circuits
ACC0535 Power Key 64.

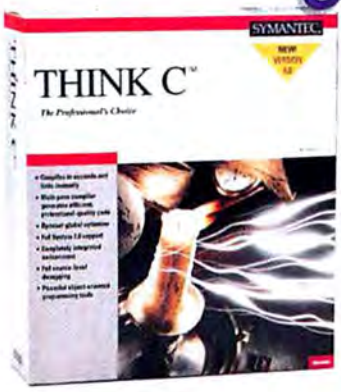
MacGlare/GuardPlus (OCLI) OCLI's filters are custom designed for all Mac monitors. They block 98% of ELF/VLF E-field radiation and eliminate static charge. Eliminates static charge, dust buildup and "flickers", enhances contrast for sharp, easy-to-read character, reduces 99% of the glare with HEA coating, and reduces the "halo" around images on the screen. Made of safety glass and comes with a SoftTouch chamois. Lifetime warranty against glass breakage. **ACC0585 $85.**



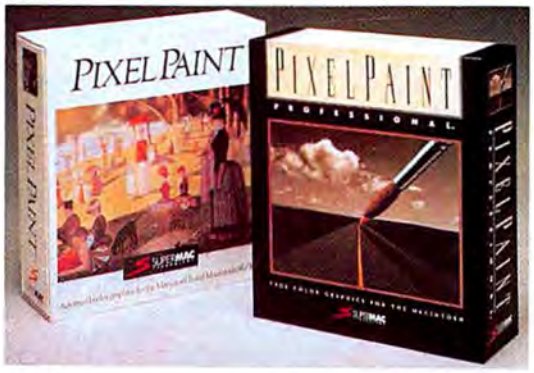


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Think C 5.0 (Symantec) ❶ Think C features an extremely fast 100% ANSI compiler, an even faster linker, an optional global optimizer, a multi-window text editor, and a powerful source-level debugger — all fully integrated for unsurpassed turnaround time. Think C gives you the power to develop any application, desk accessory, device drive or code resource. Your applications can take full advantages of new System 7.0 capabilities and support for object-oriented programming (OOP). **LNG0051 $209.**



PixelPaint 2.1 (SuperMac) The first color paint product for the Mac has set the standards all others are judged by. Create images, or import scanned images as templates. Alter sized, rotate images, colorized, and add special effects. Produce color separations from within the program. **GRA0253 $159.**

PixelPaint Professional 2.0 Uses virtual memory to open and scroll through large and multiple documents. All tools are now pressure sensitive and work like real-world tools. "Wet Paint" allows repositioning and editing of any shape or text. Image processing lets you adjust color, contrast, and brightness. Create textured canvases that simulate charcoal, paper,concrete, linen, slate, and more! **GRA0249 $519.**

DRI0384 Enterprise 030LC 20MHz 519.
DRI0356 Enterprise 030LC 25 MHz 779.
DRI0357 Enterprise 030LC 33MHz 1039.
(Gemini Full line available)
❶DRI0301 Gemini 20 MHZ Card 799.
❶DRI0302 Gemini 25 MHZ Card 1179.
❶DRI0265 Gemini Plus Kit 135.

MODEMS & FAX

Abaton
MOD0319 InterFax 12/48 255.
MOD0334 InterFax 24/96 349.
Applied Engineering
❶MOD0054DataLink/Mac 209.
Best Data
MOD0021 SmartOne 2400/1200 139.
Dove
❶MOD0038 DoveFax Desktop 299.
❶MOD0053 Dove Fax Plus 359.
Global Village
❶MOD0049 TelePort 2400 ADB Modem 139.
❶MOD0058 TelePort/Fax 9600 185.
Hayes
COM0023 Smartmodem 2400 349.
MOD0017 Smartmodem 9600 (V series) 589.
MOD0060 Personal Modem 2400 w/Smartcom II 179.
MOD0059 V-Series Ultra Smart w/ Smartcom II 799.
Microcom
MOD0050 MacModem V.32 / 9600 689.
PowerUser™
MOD0043 2400 BPS Mini Modem 99.
MOD0047 Mini Send Fax 2400/9600 149.
MOD0062 24/96 Mini Send/Receive Fax Modem 199.
Prometheus
MOD0052 9600M Plus Modem 599.
MOD0046 ProModem 24/96 MSR 299.
❶MOD0064 ProModem Ultima 699.
MOD0035 TravelModem 199.
Shiva
NET0057 NetModem V.32 (9600) 1169.
Supra Corporation
MOD0020 SupraModem 2400 119.

MUSIC & SOUND

Coda Music Software
MUS0044 Finale 2.6.1 549.
Electronic Arts
MUS0004 Deluxe Music Construction 2.5 65.
Farallon™ Computing
MUS0036 MacRecorder® 2.0 174.
Opcode Systems
MUS0083 MIDI Translator 43.
Repertoire
MUS0034 Music Publisher 359.

Tactic Software
Sound Clips Vol. 1, 2, 3 & 4 ea. 49.

SECURITY & VIRUS PROTECTION

ASD Software, Inc.
UTI0135 FileGuard 2.7 139.
UTI0130 FileGuard 2.7 - Office Pack 5 499.
UTI0131 FileGuard 2.7 - Office Pack 10 799.
ACC0539 MaccessCard Reader 299.
UTI0146 Empower II 155.
Microcom
❶UTI0093 Virex 3.0 59.
❶UTI0150 Virex 10-pack 429.
Symantec Corporation
❶UTI0214 Symantec Antivirus for Mac 3.0 (SAM) 65.



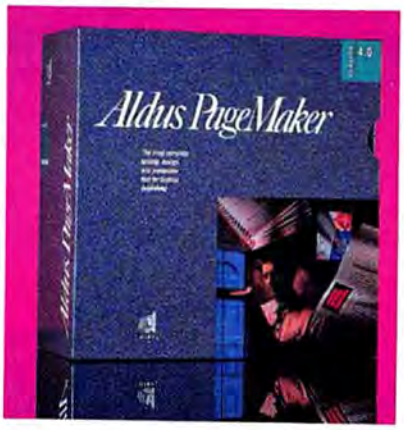
Connectix MC73 (Connectix) Plug the MC73 chip into your Mac II and you'll be able to run System 7.0 with Virtual Memory. The older 68020-based Mac IIs do not have MC 68851 Paged Memory Management Unit (PMMU) required to use Virtual Memory. Instead, they have a socket so you can add it. The upgrade kit includes the PMMU, a grounding strap, and a detailed installation manual. **DRI0385 $159.**

Connectix Mode32 Mode 32 allows older models of the Mac II and the SE/32 to use the full memory capabilities of System 7.0 — up to 128 MB of RAM, and 1000 MB of Virtual Memory (via hard disk). The ROMs in the older models do not have the more recently developed "32-bit clean" parts of the operating system, and Mode32 corrects this problem, allowing your Mac to run in 32-bit mode. **UTI0222 $99.**

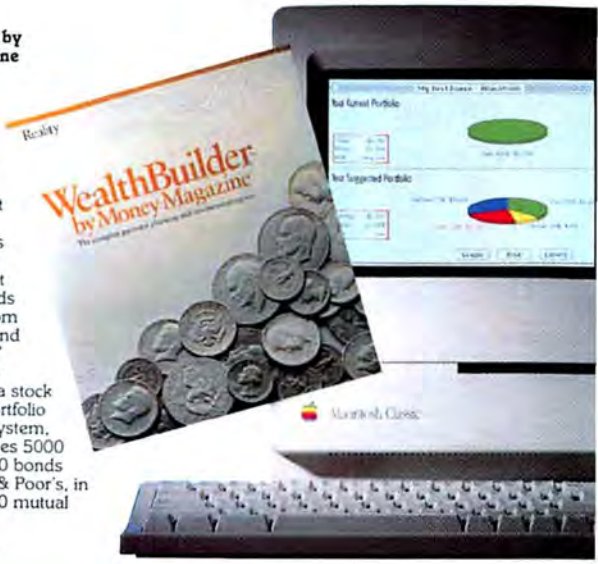
Fifth Generation System
❶UTI0120 DiskLock 118.
Kensington
ACC0235 Apple Security Kit 34.
PassProof 69.
Kent Marsh
❶UTI0028 MacSafe II 107.
❶UTI0064 NightWatch 1.03 86.
Magna
UTI0166 Empower I 89.

UTILITIES & PROGRAMMING

Abbott Systems, Inc.
❶UTI0113 CanOpener 62.
Advanced Software
❶UTI0192 Intouch 39.
Affinity
❶UTI0198 Tempo II Plus 105.
Aladdin Systems
UTI0145 StuffIt Deluxe 2.0 62.
ALSoft
UTI0132 DiskExpress II 2.07 55.
UTI0110 MasterJuggler 1.5 55.
Baseline Publishing
❶UTI0187 INIT Manager 34.
❶UTI0190 Personality 49.
UTI0183 ScreenShot 34.
Berkeley System Design
❶UTI0119 After Dark 2.0 29.
❶UTI0230 More After Dark 25.
❶UTI0231 More After Dark/ After Dark 2.0 Bundle 45.
UTI0074 Stepping Out II 2.02 55.
CE Software
❶UTI0188 Quickeys 2 v.2 97.
Connectix
UTI0148 Hand-Off II 1.1.3 56.
Custom Applications
❶UTI0136 Freedom of Press 3.0.1 255.
❶UTI0185 Freedom of Press Light 3.0.1 55.
Dantz Development
❶UTI0118 Retrospect 1.2 148.
❶UTI0196 Retrospect 1.2 Remote 269.
Dariana Software
UTI0218 MacSlueth 89.
Dubl-Click
UTI0194 ClickChange 56.
Fifth Generation Systems
❶UTI0063 FastBack II 2.5 125.
❶UTI0087 SuitCase II 1.2.1 49.
UTI0035 SuperLaserSpool 2.02-Single User 93.



Aldus PageMaker 4.01 (Aldus) PageMaker 4.01 offers significant improvements in every area from the User Interface, Page Composition, Document Formatting, Text Handling, Typography, Graphics and Color, to Printing. The Story Editor has complete word processing capabilities, including search and replace (by characters, fonts, point sizes, or paragraph styles), and a spelling checker with hyphenation. New typographic controls improve page appearance, and you can rotate text in 90 degree increments. It handles book length documents, generates tables of contents, and links graphic elements with related text. **DTP0045 $499.**



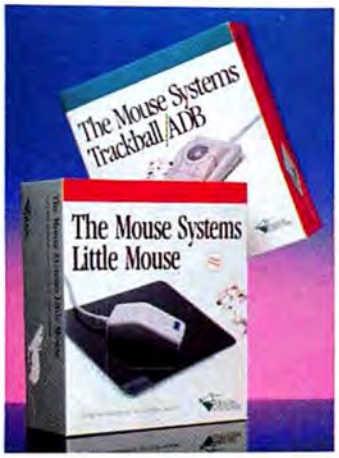
WealthBuilder by Money Magazine (Reality Technology) ❶ WealthBuilder uses your financial data and your decisions about goals and acceptable risks to calculate the best investment strategy. It reads data directly from both Quicken and Andrew Tobias' Managing Your Money. It has a stock tracking and portfolio management system, and now includes 5000 stocks and 5000 bonds from Standard & Poor's, in addition to 1450 mutual funds. **FIN0068 $99.**

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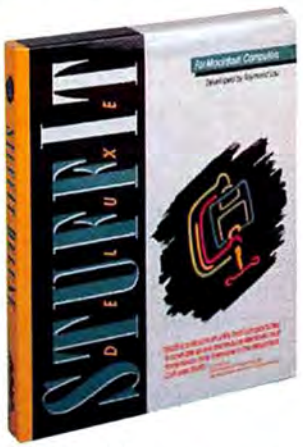
Little Mouse ADB
(Mouse Systems) ❼ Little Mouse ADB uses CMOS technology to make it the most maneuverable mouse for the Mac. Little Mouse is 22% smaller and 38% lighter than the standard Apple mouse.
It's also 50% more accurate that any other Mac mouse, because it offers 300 dpi resolution. It includes a precision mouse pad for smooth control. **INP0132 $75.** Also, **Little Mouse 512/Plus INP0131 $75.**

TrackBall/ADB
❼ Mouse functionality in a fraction of the space. Ergonomically designed for hours of comfort while providing smooth, accurate, cursor positioning. **INP0134 $69.**



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Kent Marsh
❼UTI0212 Folder Bolt 73.
Magic Software
UTI0077 Autosave II 26.
Mainstay
UTI0073 Capture 3.0 49.
UTI0189 MacFlow 3.5 169.
Microcom
❼UTI0191 Microcom 911 Utilities 89.
UTI0140 Complete Undelete 49.
Microsoft
LNG0030 QuickBASIC 64.

Caere
OmniDraft or OmniSpell ea.69.
UTI0100 OmniPage 2.1 495.
Claris
❼WRD 0026 MacWrite II 139.
DeltaPoint
❼WRD0048 TASTE/UltraPaint Bundle 79.
Deneba Software
SPL0015 Spelling Coach Pro. 3.1 124.
Microsoft
❼WRD0022 Word 4.0 245.
Nova Development
WRD0044 American Handbook of Business Letters 32..
WRD0045 Instant Library of Quotations 32.
WRD0043 English Writing Guide 39.
Paragon
WRD0029 Nisus 3.05 245.
Reference Software
❼SPL0023 Grammatik Mac 2.0 59.
Sensible Software
WRD0023 BookEnds 1.2 51.
SPL0018 Sensible Grammar 51.
SNA, Inc.
WRD0033 Stylist 51.
T/Maker Co.
❼WRD0018 WriteNow 2.2 119.
WordPerfect
❼WRD0041 WordPerfect 2.0 279.
WordStar
SPL0028 Correct Grammar 2.0 55.



Stuffit Deluxe 2.0
(Aladdin Systems) Stuffit Deluxe is faster, and offers new choices in compression methods. Containing optimizers for text and MacPaint files, Stuffit Deluxe also has the ability to create Self-Unstuffing files that you can send to others. It includes HyperCard XCMDs and DAs for compressing and expanding files from within applications, plus QuickKeys 2 and Microphone II extensions. **UTI0145 $62.**

Hand-Off II 1.1.3
(Connectix) Opens any Mac document—even if you don't have the creator application. Simply choose a compatible substitute and let Hand-Off II connect the file to any application. Hand-Off II even lets you open DOS files with compatible Mac applications. Its convenient pop-up menu lets you launch applications, and it automatically sets color depth and sound level on launch. Hand-Off II lets you create "briefcases" containing related files and applications, so you can launch all of them simultaneously with a single mouse click. **UTI0148 $56.**



Now Software
❼UTI0167 Now Utilities 2.0 79.
❼UTI0168 Screen Locker 45.
ON Technology
UTI0142 ON Location 75.
Salient
❼UTI0179 DiskDoubler 3.7 49.
SNA
UTI0207 Offline 2.0 65.
SuperMac
UTI0203 DiskFit 2.0 65.
Symantec Corporation
UTI0151 Norton Utilities for the Mac 89.
UTI0078 Symantec Utilities for Mac II (SUM) 96.
❼LNG0051 THINK C 5.0 209.
LNG0002 THINK's Pascal 3.0 165.
Tactic
UTI0208 MasterFinder 49.
Zedcor
LNG0031 ZBasic 5.0 99.

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Baseline
❼SPL0029 Thunder 7 56.

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❼ Made to our exacting specification by a leading manufacturer. The anodized aluminum cases match the platinum finish of most Macs, and help to control the sound, and dissipate the heat. All come to you pre-formatted with a current System Folder installed - ready to use right out of the box. Includes a rear panel SCSI address selector switch, two 50-pin SCSI connectors, and removable internal SCSI terminators. Manufacturer's one-year warranty. Available in 20 MB to 80 MB. **20MB Only $329, 40MB Only $339, 60MB Only $419, 80MB Only $459.**



PowerUser 44MB Removable
Contains the industry-standard Syquest mechanism. Manufacturer's 1-year warranty. Price includes one cartridge. **$589.**





2400 BPS Mini Modem
Install a new Power User 2400 baud modem and log on to any of the exciting on-line services! This fully Hayes compatible modem comes with everything you need to start communicating. It's easy to install and ready to use. Comes with MAcKNOWLEDGE communication software and the latest Maxfax software. Cable is included. **MOD0043 Only $99.**

24/96 Mini Send/Receive Fax Modem
Includes all the features of the PowerUser 2400 BPS Mini Modem plus a powerful 9600bps send/receive fax to meet all your communication needs. Preview your fax on the screen, print it, delete it or forward it to another fax machine. Includes greyscaling to any Group III fax. All PowerUser modems come with a one year warranty. **MOD0062 Just $199.**

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One of System 7's best features is that 7-savvy applications can work together and share their functionality. Eddy winners Virtus, Robyn Miller, and Rand Miller (of Cosmic Osmo fame) recently demonstrated this concept by linking Virtus WalkThrough and HyperCard. You use the mouse to navigate WalkThrough's 3-D world until you enter a building, when you suddenly find yourself in an Osmo-like environment. Not magic, but close.

By John Rizzo



One to hang on your belt: From Hewlett-Packard's calculator division comes what may be the world's smallest computer — the HP 95LX, a PC XT computer and business calculator rolled into one. This 11-ounce palmtop comes with Lotus 1-2-3, an appointment book, and a file manager built in to ROM — all for $699. Hardware includes a 16-line LCD screen, 512K of RAM, and a slot for memory cards. You can download files to your Mac, using the Kermit protocol and the cable for HP's 48SX calculator.

RAM power: You don't need lots of cash (or cache) to be a power user, but it's certainly more challenging to be a power user on a Classic than it is on a IIfx. If 4 megabytes is the most your Mac can hold, try *not* upgrading to the latest wave of software — System 7 and Excel 3.0 will take up all your RAM, and one open application does not a power user make. On the high end, Mac IIfx users have a new RAM option — 8-megabyte SIMMs from Newer Technology ([800] 678-3726). The price ($1,125 at press time but continually dropping) includes Connectix's Optima 128, an INIT that breaks System 6's 8-megabyte RAM limit. Because you can mix 'n' match quartets of the new SIMMs with foursomes of 1-megabyte, 4-megabyte, or 16-megabyte SIMMs, it's possible for your Mac to hold from 4 to 128 megabytes of RAM.



Jukebox CD-ROM: Pioneer's DRM-600 disc changer lets you put six CD-ROMs on its drive, but if you want to look at the contents of each disc, you have to wait for each one to swap in and out of the drive. Now Optical Access International offers the Access CD/6 Pak ($1,495), which lets you mount all six discs on the desktop at once. The CD/6 Pak comes with Pioneer's changer and OAI's SuperCache software. (800) 433-5133.



Programming news: Ever dream of a universal scripting language for the Mac? UserLand's Frontier (shipping in October) lets you automate operating-system and application functions, such as backing up, renaming, and deleting files and launching and controlling applications. (415) 325-5700. For those who are crazy enough about LISP to buy prerelease, or beta, software, Apple has released Macintosh Common LISP 2.0B1 through APDA for a mere $495. The new version of the object-oriented language incorporates Common LISP and CLOS (Common LISP Object System) standards and the Interface Toolkit for graphically creating a user interface. If you buy the beta version, you'll get a free copy of the finished product when it ships.

Breaking In to TV

Creating effective Mac-based video demos is inexpensive and easy. Here's what you should know before you start.

By Salvatore Parascandolo

If you've ever wanted to set up an in-house facility for producing Mac-based video demos or training tapes, the time is right. Chances are that you already have many of the components you need, such as a videocassette recorder and the appropriate video card installed in your Mac. (For information on the Mac-to-video hardware and software you'll need, see "Putting Your Mac on TV: Desktop Video," August '91, page 94; to learn about a low-cost Mac-to-video setup, see the "Video on a Budget" sidebar accompanying this article.) But creating a successful video presentation involves more than just finding the right hardware — you also need to recognize desktop video's limitations and know how to get around them by choosing the best graphics for your presentation.

On Display

There are two display problems — overscanning and flickering — that you should take into consideration when designing a presentation. Overscanning occurs because a TV picture covers the screen from edge to edge, extending past the visible edges of the picture tube. You never see the outer edges of a broadcast image, but that usually doesn't matter. However, when you send a 640-x-480-pixel computer image to a TV, overscanning magnifies the image, placing important items — such as the menu bar, Trash, and disk icons — at the edges of the TV's display area and practically out of sight. When designing your presentation, try to keep important items within the viewable screen area (see Figure 1).

A bigger display problem is the flickering that occurs in display of thin horizontal lines, such as those in a spreadsheet. Computer monitors refresh the entire screen 60 times per second or faster. A TV, however, paints the screen only 30 times per second, in two interlaced passes. One pass lays down the even-numbered rows, and the next lays down the odd-numbered rows. Any thin horizontal line in a document occupies a single odd or even row, so it's painted only during odd or even passes — or just 15 times per second,

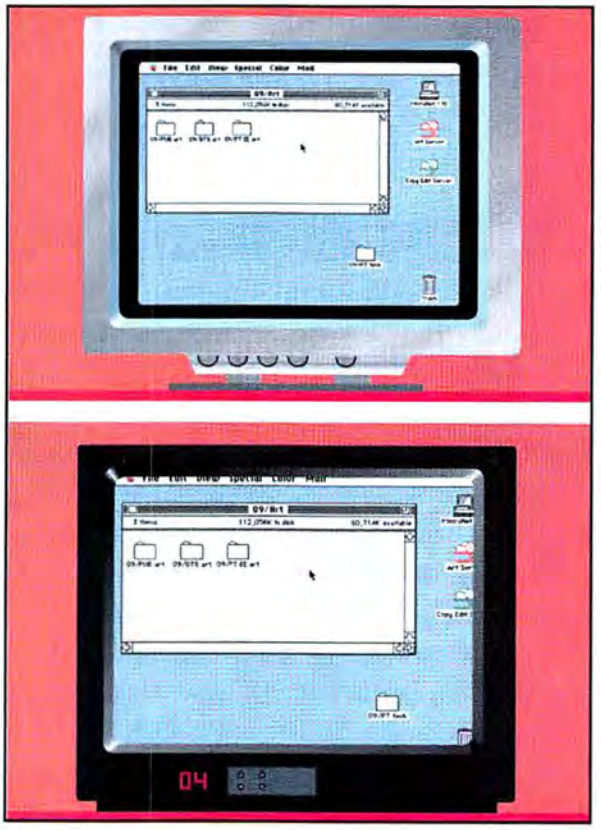


Figure 1: In a typical TV display, overscanning magnifies an ordinary 640-x-480-pixel desktop (above) so that items at the edges, such as menus and disk icons, are barely visible (below). Some video cards correct for overscanning, but you should also design your presentation so that all items are visible on the TV screen.

which creates a flickering effect. There's an expensive (about $2,500) flicker-free solution in the form of VideoLogic's Mediator (a scan-converter/NTSC-encoder-box combination), but the following tips offer some cheaper solutions.

Licking Flicker

Here are some hardware and software flicker-correcting solutions:

•Two video cards that correct flicker are Apple's Macintosh Display Card 8•24 and Macintosh Display Card 8•24 GC. These cards also produce a smaller desktop that compensates for overscanning on the TV display. To set the flicker-free option, go to the Monitors control panel and select the monitor icon that represents the video card you're using with the TV or VCR. Set the monitor to black-and-white or 4, 16, or 256 colors (or grays). Select Options, and click on the Flicker Filter check box in the subsequent dialog box. Close the control panel, and restart. After startup, you'll see a smaller desktop on your video device and the image will be flicker-free.

•You can also get a flicker-free presentation with the older (and now discontinued) Macintosh High-Resolution Display Video Card. You need to use the Macintosh II Video Card Utility (available from user groups) to adjust this card's display rate for TV/VCR output. The utility's flicker correction works only in black-and-white mode.

•If you're working without a flicker-fixing setup, avoid background grids when using graphics programs and don't display spreadsheet grid lines. Tuck the window's title bar as far as possible under the top of the screen or menu bar so that the horizontal lines won't flicker.

•Try using 2-pixel-wide lines for drawing. This eliminates most flicker. Lines angled at 20 degrees or more from horizontal don't flicker.

•Use a colored background to reduce the contrast between the foreground objects and the background.

•Avoid using patterns. If you must use them, open your application's Pattern palette and check it on the TV screen to see which patterns flicker most.

•To reduce the contrast between the edges of the text and the background, use a program such as Photoshop to create anti-aliased (smooth-edged) text whenever possible (see Figure 2).

Improving Your Image

Try these tips when you're composing a presentation:

•Design for the kind of equipment that will be used to display the presentation to an audience. Make allowances for the loss of quality from duplicated videotape.

•Judge the size and readability of elements such as text and graphics on the TV display from the distance at which your audience will be viewing it. Make adjustments accordingly.

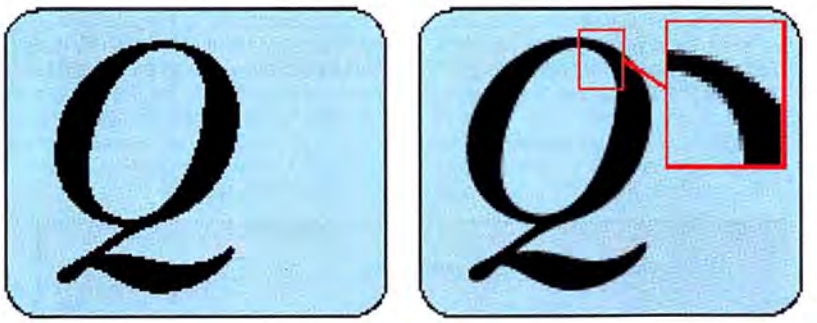


Figure 2: To reduce contrast and therefore flickering, use anti-aliased (smooth-edged) text whenever you can. The magnified character (right) shows how the anti-aliased pixels along the edge of the character blend the letter's color with that of the background.



Figure 3: Simple steps for clearer text on a TV screen include using boldface styles, colored text to reduce contrast and flicker, larger font sizes, and shadowed text to occasionally add contrast. Frequently used symbols such as + and = demand even larger point sizes than does text, because they're naturally small and can be indistinguishable on a TV screen.

•Compose presentations to fit the TV screen, not the Mac screen. If you don't want to work directly with a TV as your composition monitor, use a drawing program to construct a 512-x-342-pixel rectangle and save it in the Scrapbook or in a template document. Use it as a guide for composition.

•Use larger font sizes than usual, because a TV display's lower resolution makes small font sizes hard to read. Try boldface styles. Font legibility depends upon the quality and compatibility of your video card, converter box, recording unit, and display system. The better they are, the smaller the point size you can get away with. Typically, 18 points is legible on most screens. 12-point Geneva Bold and 12-point Chicago are good regular-sized starting fonts (see Figure 3).

•Use shadowed text occasionally to add contrast between text and the background.

•For spreadsheets, use larger font sizes so that important symbols such as + and = are clear.

•Record your session at your VCR's standard-play (SP) setting for the best playback quality.

•At show time, use your TV or VCR sharpness control and adjust it until you get the best-looking image. This generally helps reduce residual flickering, false color, and ghost-edged pixels.

•Your video production will be a silent film unless you use a sound-capturing system that includes a good microphone (these cost $20 or so) and a tape deck and microphone amplifier or audio mixer. You don't need anything elaborate or expensive — you're not using the tape deck to record sound, only to accept and control the microphone input and send it through the Line-OUT or Play jack to the VCR's Audio-IN jack.

Salvatore Parascandolo has discovered that recording a good, smooth presentation is far harder than choosing the hardware.

Video on a Budget

There are various ways of channeling and converting the Mac's video information to the NTSC (National Television Standards Committee) format understood by TVs and VCRs. At the bare minimum, you need a video-output card installed in your Mac that can synchronize to the requirements of TV/video output and an NTSC encoder that can convert the Mac's video information to NTSC format. Some video cards have this capability built in; others require you to use an encoder box or special cable between the Mac and the TV or VCR.

As long as you're happy with a black-and-white or gray-scale presentation, you can go to video without investing in an NTSC encoder or special board. With a small-tip soldering iron, you can make a cable for about $5 that'll let you connect your Mac's video card to a TV or VCR. You can use this cable with Apple's Macintosh Display Card 8•24 and 8•24 GC, the Macintosh High-Resolution Display Video Card (assisted by the Macintosh II Video Card utility), the Macintosh Display Card 4•8, the Radius DirectColor GX card, and the RasterOps ColorBoard 264 and ColorBoard 364.

To make the cable, you need a DB-15 male connector and a shielded coaxial cable attached to an RCA plug (a typical stereo-hookup plug), available from electronics stores (see Figure A). You also need a small-tip soldering iron and needle-nose pliers.

Solder the center wire from the RCA plug/cable to pin 5 on the back of the DB-15 connector and the outer wire to pin 6. Using a piece of wire, connect pins 4, 7, and 11 and twist the wire's ends together and solder them (see Figure B). To avoid inadvertently connecting the wrong pins, double-check the numbers by each connector pin before you solder. When you've finished connecting the pins, triple-check the final assembly by pin number.

To use the cable, plug the DB-15 connector in to the Mac's video-card port. Plug the RCA plug in to your VCR's Video-IN port, and connect the VCR to the TV. Set the display in the Monitors control panel to grays, not colors — you'll get gray scale anyway, but by setting the monitor to grays, you get much smoother shading. If you're using the Macintosh High-Resolution Display Video Card with the Macintosh II Video Card utility, you need to set the monitor to black-and-white (make sure also that you check the Flicker Filter box in the Options dialog box). The TV screen now becomes the monitor, and you can use the VCR to record your presentation.



Figure A: For about $5, you can create a Mac-to-video cable from an RCA (phono) plug connected to a shielded coaxial cable (top) and a DB-15 male connector (bottom).

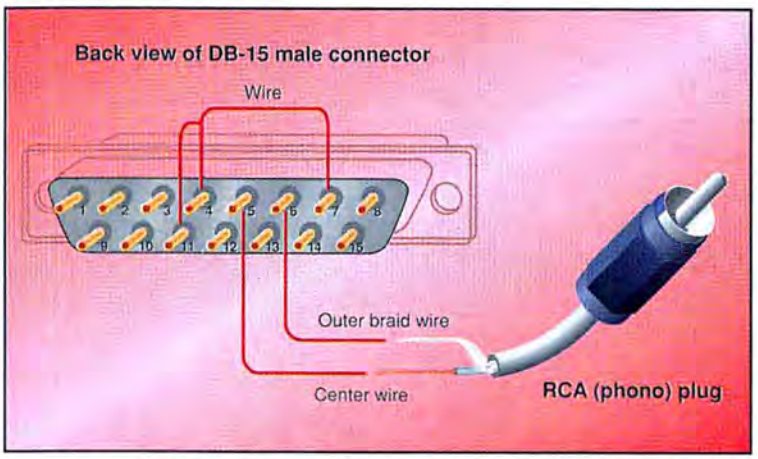


Figure B: If you're handy with a soldering iron, you can make this cable for about $5. It connects several popular video cards directly to your VCR or TV without requiring an NTSC-encoder box. To make the cable, connect the RCA plug's center wire to pin 5 of the DB-15 connector and the outer braid wire to pin 6. Use wire to connect pins 4, 7, and 11, and solder the wires' ends together.

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File Sharing Made Easy

System 7's file-sharing capability brings real networking power to individuals — and the price is right. Here's a quick course in what it does, what it doesn't do, and how it fits into the scheme of things.

By Bob LeVitus



System 7 gives you built-in file sharing — the ability to share folders and their contents with others on the network. It's not the fastest or most powerful way to share files, but it has two seductive advantages — it comes with System 7, and it *works*. In fact, for small workgroups (or for larger groups that share files only occasionally), file sharing works great. If you don't already have a way to share files across your network (and maybe even if you do), System 7's built-in file sharing may be just what you need.

So what's the catch? Well, file sharing does have drawbacks, some of them quite severe. For example, it's not as fast as using a dedicated server, it doesn't allow centralized administration and backup, and only ten users at a time can log on to your Mac to access shared volumes.

If you remember that System 7's file sharing is not for big, complex, or heavily used networks, everything's fine. Also remember that file sharing requires about an extra 268K of RAM, so when you're not using it, make sure you turn it off, via the Sharing Setup control panel. You must be connected on an AppleTalk network to use file sharing. If you have a networkable printer such as a laser printer, your network is already in place.

How It Works

File sharing is a personal version of AppleShare — it lets you share volumes and folders (and the files inside them) with other users on an AppleTalk network. With your permission, other users can view or edit documents that are on your hard-disk drive from their Macs. File sharing includes some security features that provide password control over who can see or change files on your hard disk.

What you get with System 7 is *distributed* (also known as *peer-to-peer*) file sharing — meaning that it doesn't require a dedicated file server as AppleShare does. (With distributed file sharing, any users on the network can make their files available to any others; dedicated file sharing, in comparison, requires that one machine, the server, contain all shared files.)

Installing file sharing is a breeze — it's automatically installed when you install System 7 (unless you perform a custom System installation, in which case you need to install the file-sharing software). There are five easy-to-use components: the Sharing Setup, Users & Groups, and File Sharing Monitor control panels; the Chooser; and the Sharing command on the File menu.

File sharing is easy to use. If you've never tried it, here's a quick tutorial that will let you share files in minutes. First, open the Sharing Setup control panel and type in your name, a password, and your computer's name. (Your name is your account name for the network. It lets you log on to your Mac's shared folders and volumes if you want to access them from another Mac on the network. The computer name you enter is the name that will appear in

the list of available file servers on the network when another user clicks on the AppleShare icon in the Chooser.) Click on the Start button for file sharing, and close the Sharing Setup window: File sharing is now turned on.

Next select a folder to share, and choose Sharing from the File menu. After the privileges window appears, click on the check box next to "Share this item and its contents," and your name appears as the folder's owner. Make sure you have the following privileges: See Folders, See Files, and Make Changes (these are usually selected as defaults). Close the window, and click on the Save button when you're prompted. That's all you have to do to make a folder available for sharing.

Accessing a shared folder or disk is the same as accessing an AppleShare server. Simply go to another Mac on the network, use the Chooser to select AppleShare, select your computer's name, and click on OK. Type in your name and password; click on OK; and when the dialog box appears, select the shared folder and click on OK. An icon (the same one you'd see if you accessed an AppleShare server) with the name of the folder appears on the desktop, and you can access anything in the folder, although you're using someone else's Mac. You can even use file sharing to access your entire hard disk across the network by making your hard disk a shared volume, as described in the "office on a floppy disk" trick in last month's column.

Generally you're going to want to make volumes and folders available to other users. The Sharing command lets you give privileges to everyone on the network. You can also restrict access to certain users or groups, however. To do this, go to the Users & Groups control panel, choose New User from the File menu, type in the name of the user to whom you want to give access to the folder, and then double-click on the icon with that user's name. The dialog box that appears lets you assign a password and privileges to that user (now a *registered user*). Close the window, and save your changes. To make a shared folder available to the new user, select the folder, choose Sharing from the File menu, and select the new user's name in the pop-up User/Group menu.

If you want to create a group of registered users, the process is similar: Select New Group from the Users & Groups control panel's File menu, and then give it a name. When the New Group icon appears, drag in the icons of the users you want to make members of that group.

If you have a mixed System 6/System 7 network, you can still use file sharing. Although System 6 users can't share folders from their Macs, they can access shared volumes and folders that are on Macs running under System 7. The procedure is exactly the same as accessing a normal AppleShare server, so if they don't already have it, System 6 users must install the AppleShare client software, which is part of the Mac's System software.

If you use removable media, such as CD-ROMs or SyQuest cartridges, and you have file sharing turned on, the removable media are shared automatically (only you have privileges, however, until you give privileges to other users). This means that all mounted volumes on your desktop are available to you from other Macs on the network, but it also means that to eject these disks or cartridges, you must turn file sharing off.

Clearly, file sharing is pretty simple. However, if you're new to the Mac and your copy of System 7 came from the Personal Upgrade Kit, take some time to go over the materials in the kit. For basic information and a hands-on introduction to using file sharing, check out the Macintosh Networking Basics on-disk tutorial — you'll be up and running in no

The System 7 File: Alias Assassin

If you're already using System 7, you've probably realized that aliases are a mixed blessing. Aliases are duplicate icons for files, folders, and volumes that are linked to an original file. You can, for example, have a FileMaker Pro alias in the Apple Menu Items folder that opens the real FileMaker Pro application, which is filed deep in folders somewhere on your hard disk. Unfortunately, when you delete a file, the aliases remain, so you could easily have a hard disk full of aliases relating to nonexistent files.

Apple hasn't provided an easy way of getting rid of "orphaned" aliases, which is where Alias Assassin comes in. Alias Assassin, an application developed exclusively for *MacUser*, seeks out and destroys orphaned aliases. It scans your hard disk to find all unattached aliases and lets you choose whether the orphans should be trashed (see Figure A). If you have aliases relating to unmounted volumes, Alias Assassin asks you to mount the volume to confirm whether it still exists.

Alias Assassin is smart. It attempts to reunite an alias with its parent file, even if the path between the two has been lost because you've shuffled files around on your hard disk. And if you're fed up with aliases entirely, Assassin can kill them all at your discretion.

Alias Assassin was programmed by Bill Monk, of Birmingham, Alabama, a developer and longtime *MacUser* reader. Alias Assassin can be found only on Zmac, *MacUser*'s on-line service on CompuServe. The filename is AliasA.SIT, and it's in Library 3 (Utilities) of the MacUser Forum or Library 1 (Applications) of the Download & Support Forum.

If you've got System 7 tips and information, let us know about them, either by writing to The System 7 File, c/o *MacUser*, 950 Tower Lane, 18th Floor, Foster City, CA 94404, or by posting them on Zmac (see the masthead in this issue for how to sign up). As an added incentive, we're offering an "I Beat the System" T-shirt for each month's best tip.

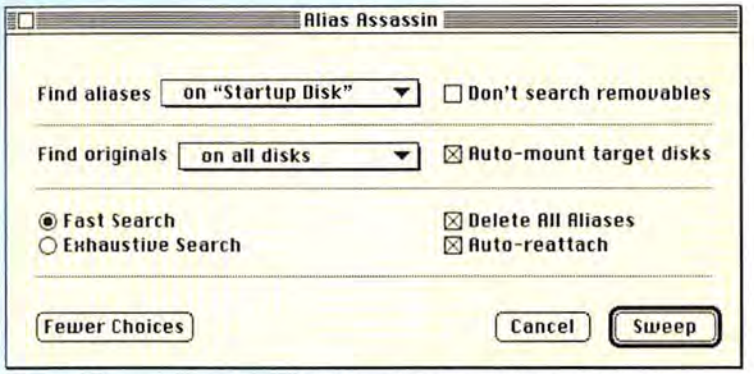


Figure A: Aliases are great, except that sometimes they stick around a little longer than you need them. Alias Assassin eliminates orphaned aliases (aliases whose parent file has been deleted) with the click of a button.

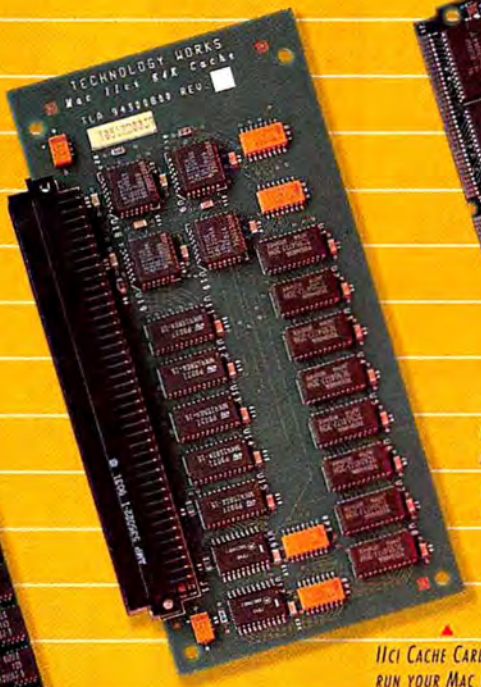
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time. For more details, read the 116-page *Macintosh Networking Reference*. It's clear, concise, and well worth spending some time with. For more information, some System 7-specific reference books are starting to turn up in bookstores. I recommend Craig Danuloff's *The System 7 Book* (Chapel Hill, North Carolina: Ventana Press, 1991), but other books should be available too, including Charles Rubin's *The Macintosh Bible Guide to System 7* (Berkeley, California: Goldstein & Blair, 1991) and Kay Yarborough Nelson's *The Little System 7 Book* (Berkeley, California: Peachpit Press, 1991).

What It Doesn't Do

The limitation that will affect the most users is the fact that file sharing lets you share only ten folders at a time. Furthermore, only ten users can simultaneously be connected to any shared volume. If you need more capacity than this, you need more-powerful file-sharing software. If your network is big, heavily used, or complex, it's probably better to use AppleShare — Apple's heavy-duty dedicated file-server software —or a third-party alternative such as Novell NetWare for Mac (for a complete report on dedicated file servers, see "Mac, DOS, and VAX File Servers," June '91, page 134).

According to Apple, using System 7's personal file sharing is slower than using a dedicated server. File sharing is optimized for small workgroups, and you get the best performance when traffic isn't too heavy. Dedicated file servers, on the other hand, are designed for high traffic and many users, so depending on your network configuration, an AppleShare server can be about 25-percent faster than a Mac using file sharing. If performance is an issue, look beyond System 7's built-in file sharing.

Another drawback, particularly if you have a Mac Classic or an LC, is a perceptible performance degradation when other users are accessing your files over the network. Some of the symptoms include erratic cursor control and windows that flicker as they open or close. If this is bothersome, switch to a dedicated file server.

File sharing doesn't involve any kind of centralized administration. All administrative responsibility (deciding who has access to files and who can make changes, for example) is in the hands of individual users. There's no network-administration software, no way to monitor which users are added and deleted, no systemized backups, and so on. Although such a democratic system can work for small groups, I discourage it for larger networks, where good network administration is vital for a smooth-functioning network.

Another potential problem is the unavailability of files on Macs that are shut down or disconnected from the network. A dedicated file server eliminates this problem, because when it's on, all files are available.

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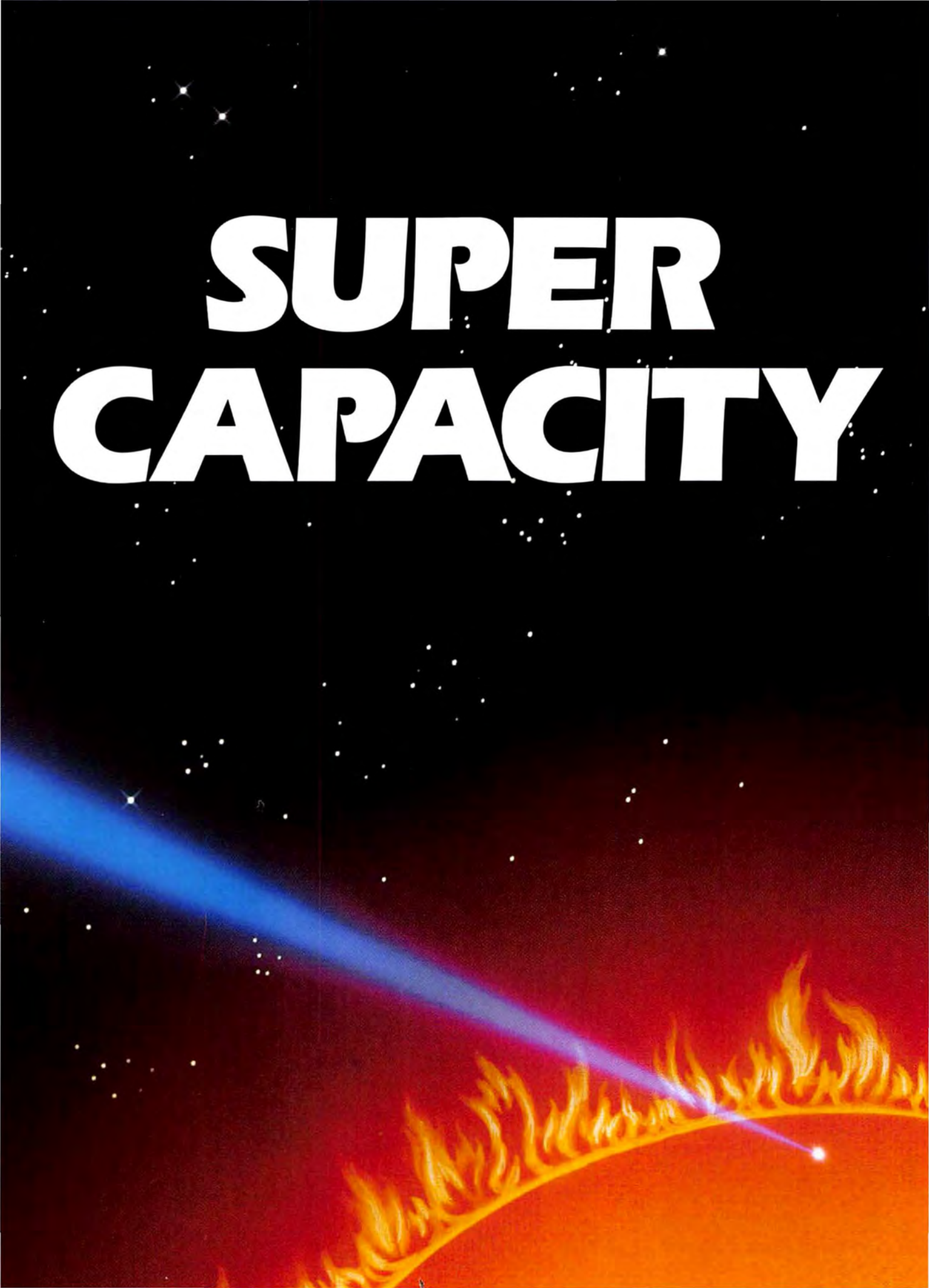
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The Big Picture

Perhaps you're wondering where file sharing fits into the grand scheme of things. Will it be the death of third-party distributed-server software such as Sitka's MacTOPS and DataClub, from IBS? Will it make inroads into the dedicated-file-server market?

Probably not. In fact, it'll probably inspire a new generation of file-sharing software that's easier to use, is more powerful, and offers more choices. Why? Because by building file sharing in to System 7, Apple has raised the stakes. Now other file-sharing products have no choice but to improve if they want to survive. And they will. I've seen preliminary information on System 7-friendly versions of MacTOPS and DataClub — both products should be available by the time you read this — and each has powerful features that aren't found in personal file sharing.

Remember when Apple began including the utility MacroMaker in System software? There was speculation that it would kill similar third-party products such as QuicKeys and Tempo. It didn't, though: It made them healthier. Now we have QuicKeys 2 and Tempo II Plus, and MacroMaker is history. The same thing happened with HD Backup, the backup software that used to be included with System software. It didn't kill programs such as Redux, DiskFit, or Retrospect — it didn't even make them sick.

So just as MacroMaker and HD Backup fired up third-party publishers to write better programs, personal file sharing should mean better third-party file-sharing software.

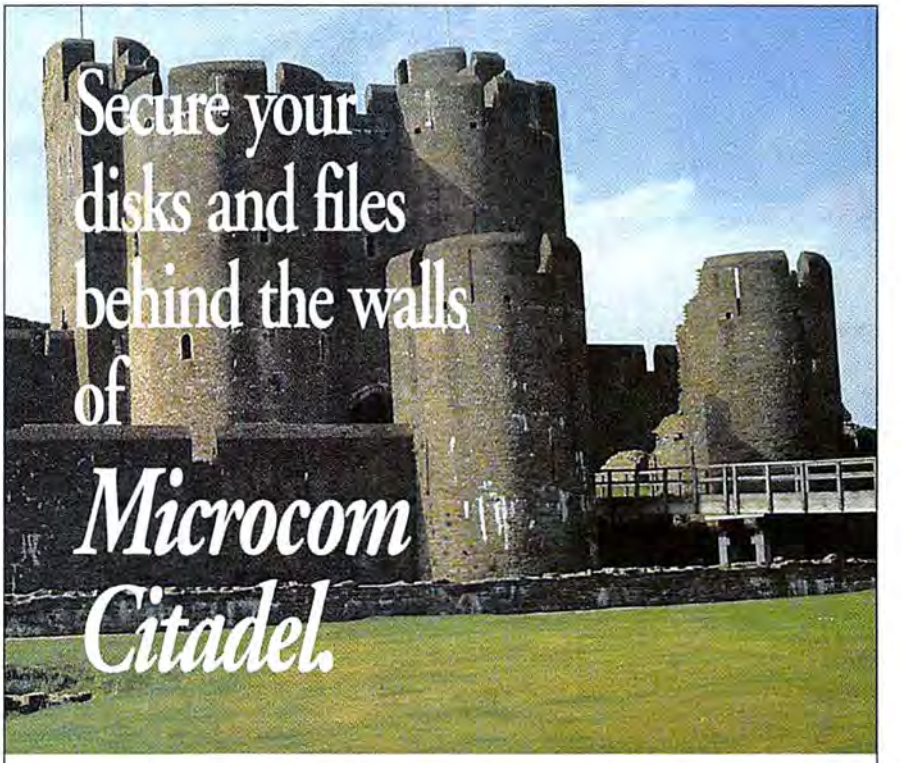
The Bottom Line

With modest needs, a small network, and light file-sharing demands, System 7's file sharing works well. If your network is big and/or busy, you need to investigate more-powerful solutions you can use with file sharing.

Regardless of your network's size, file sharing is convenient, even if you use it only to create a folder on your Mac into which other users can drop files for your review, without giving them any other access privileges. For small offices with fewer than ten Macs, it's a cheap way to finally kill off SneakerNet. I can't count the number of small businesses I've visited that don't have any file-sharing software and offer excuses such as "It's too much hassle," "It's too expensive," or "We haven't gotten around to it yet."

From now on, these alibis are unacceptable. File sharing is not a hassle, it costs nothing, and — assuming you're already sharing printers — all you have to do is turn it on. There's nothing to lose. If it turns out you need more-powerful software, all it's cost you is a little time.

Bob LeVitus is working on an update to *Dr. Macintosh* as well as *Son of Stupid Mac Tricks*, both from Addison-Wesley (Reading, Massachusetts, 1991).



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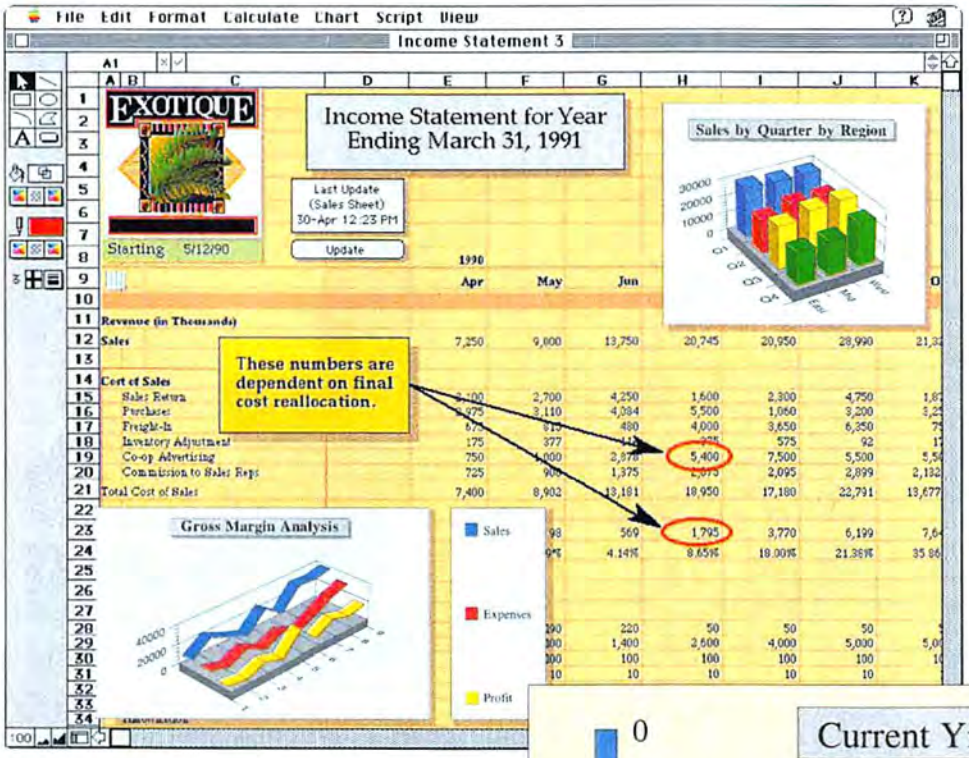
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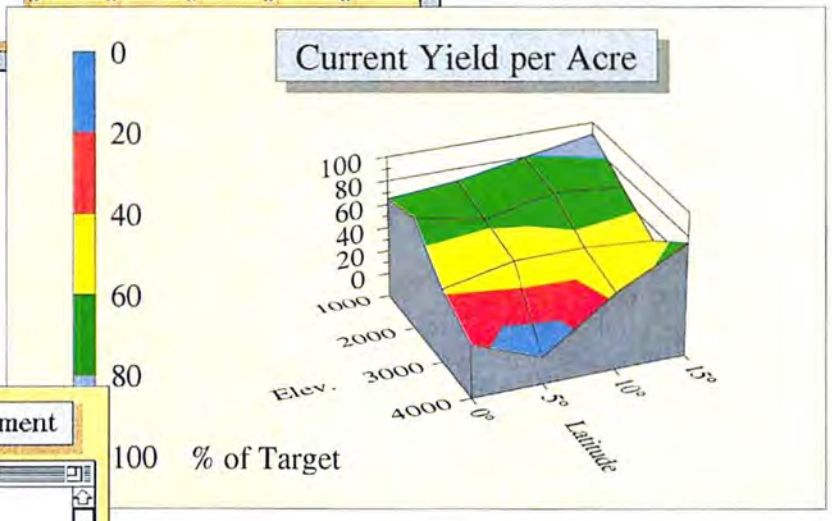


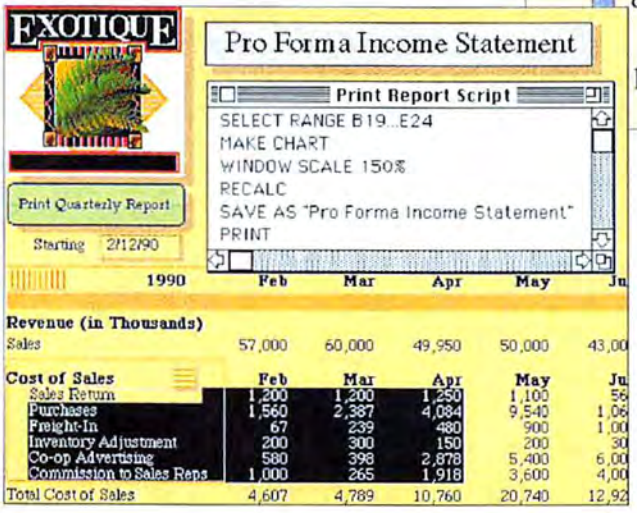
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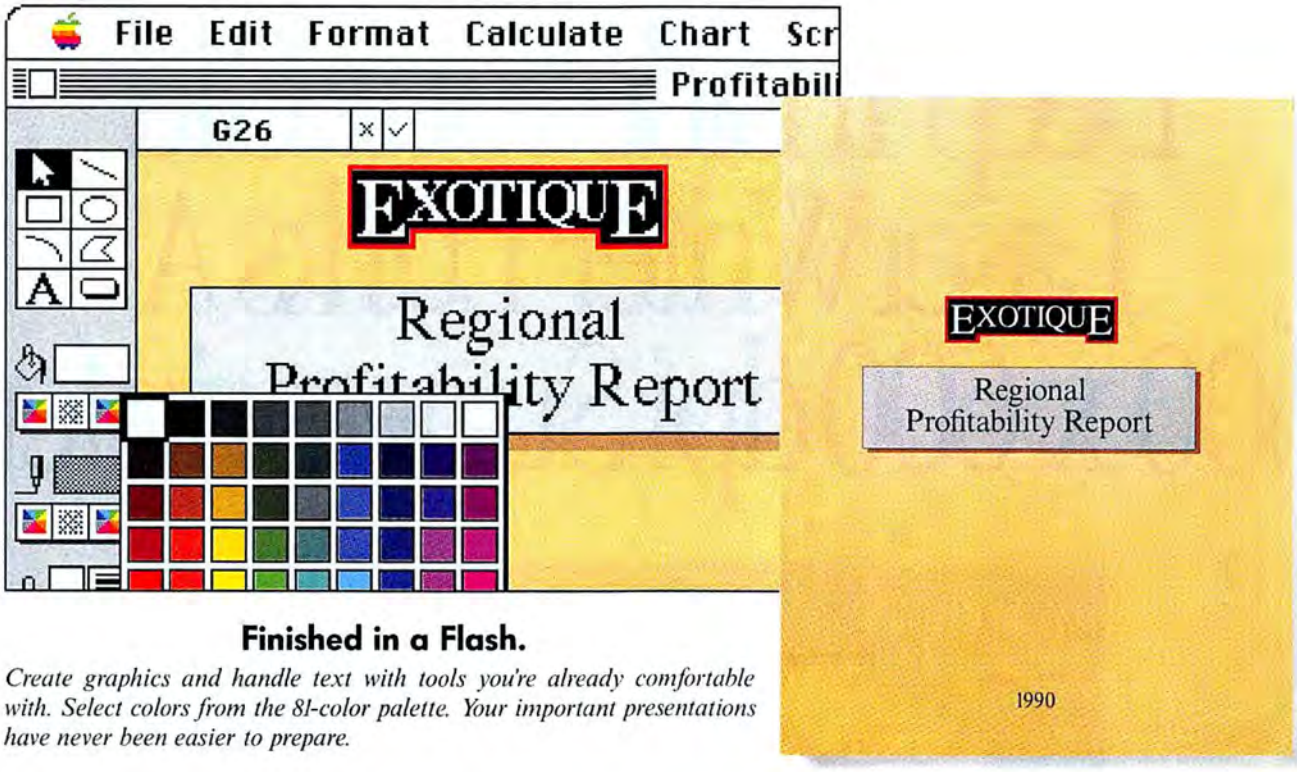


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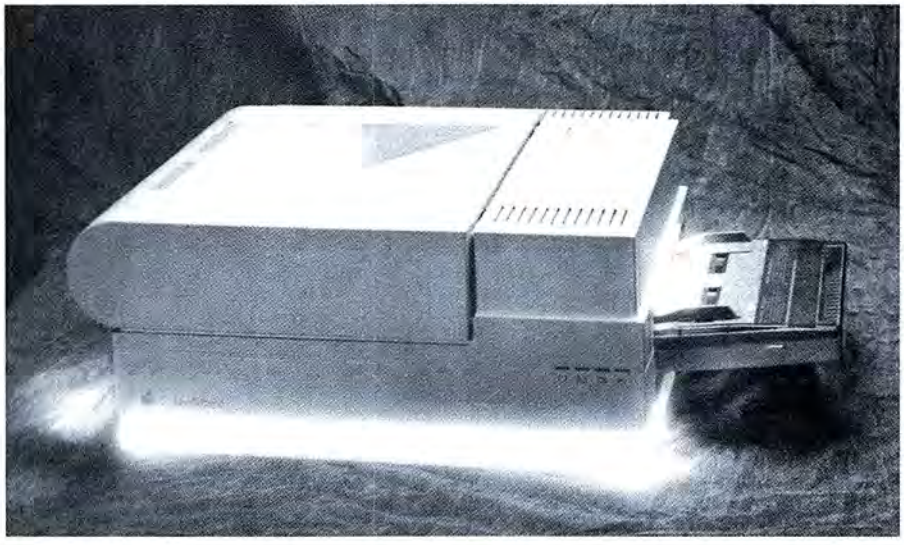
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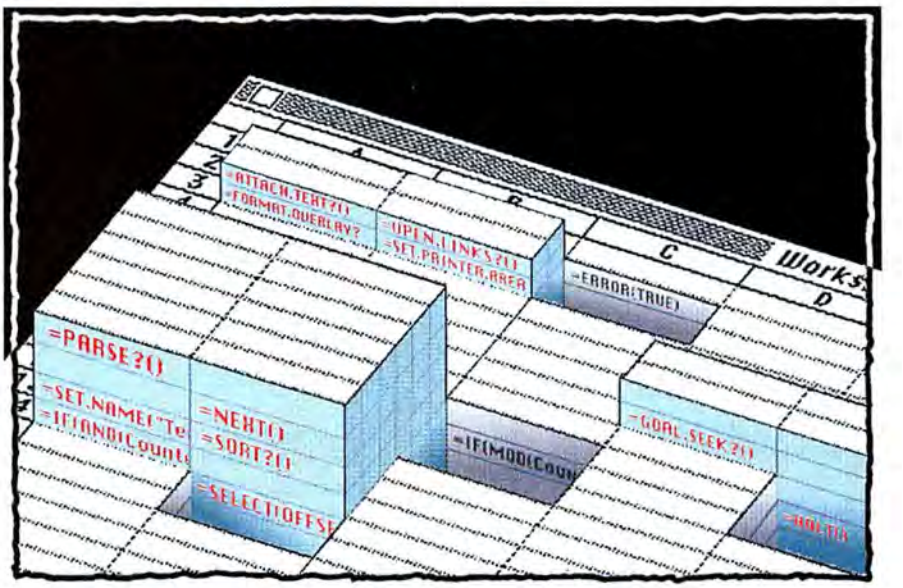
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Excel's Add-In Value

Excel's new add-in macro sheets let you add custom features to worksheets, databases, and graphs.

By Julianne C. Sharer and Steven S. Wexler



Even though Microsoft has added many new spreadsheet, graph, and database features to Excel 3.0, there's probably something from your wish list of features that wasn't included. Well, if Excel 3.0 doesn't have everything you want right out of the box, you may be able to build that desired feature yourself, using Excel's add-in macros.

Excel's macros—sequences of stored commands that can be played back as desired—are stored on macro sheets, which look like standard Excel worksheets but which have wider columns for writing and storing the macro code. Basically, an add-in is just a macro sheet that has been saved in the Add-in file format. You open it just as you would any other file; after that, however, you have no access to it and it becomes a transparent part of the program. The only way you can tell that you've loaded an add-in is by the added abilities (such as new menu options and functions) it gives the program. You can also get Excel to load an add-in file automatically by placing it in the Excel Startup Folder in the System Folder. If you do this, the add-in will behave as though it were an integral component of Excel.

Add-ins differ from standard macro sheets in three important ways:

1. Once an add-in has been loaded, you can't examine it and it remains loaded until you quit Excel. This means that developers don't have to worry about hiding the macro sheet or protecting it from curious users.

2. Because they can run automatically, command macros (command sequences stored as macros) that are part of the add-in do not appear in the Macro Run dialog box.

3. Custom functions that are part of an add-in appear in alphabetical order within the Paste Function dialog box, rather than at the end, and are not preceded by the add-in's filename. (You create custom functions by combining formulas and built-in functions and use them to simplify frequently used calculations.)

Add-in macros can be as simple or as complex as you like. Because they add transparent functions to Excel, add-ins are an ideal way to add company-specific features to the program. For example, if your company has guidelines on how charts should appear, add-in macros let you easily modify Excel's Set Preferred command so that users can choose from predefined chart types, complete with corporate logo and font preferences. In this article, we'll show you how to create an add-in by writing a macro that enhances the way Excel sorts a database. (This macro is also available from Zmac's MacUser Forum, in Library 3 [Utilities]. The filename is XLSORT.SIT.) You create, edit, and format macro sheets, using the same procedures as for worksheets. If you've never written or used a macro, look at Excel's *User's Guide* for a good introduction.

Improving Excel's Sorting

Creating a database in Excel is an easy matter – you simply highlight the column headings (field names) and rows (records) you

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want to include and then choose Set Database from the Data menu. Excel then creates an area called Database that expands and contracts automatically as you add or delete records by using the Data menu's Form command. This works fine until it's time to sort the records in your database. Even though you've already defined an area called Database, when you want to sort the records, Excel requires that you first highlight the area you want to sort — in this case, the Database area less the field names — before you issue a Sort command. Wouldn't it be nice if Excel could figure out that because you've already got an area called Database, it should just go ahead and sort those data records? Well, with Excel's add-in capability, you can modify the built-in sorting routine to do just that.

The NewDataSort add-in (see Example 1) does the following: When you click on Sort, it first determines whether or not the Database area has been defined on the active worksheet. If it has not been defined, Excel will display the standard Sort dialog box, which asks you how you want to sort the data. If the area *has* been defined, Excel will go ahead and select only the records from the database and *then* display the Sort dialog box.

The NewDataSort macro is formatted in the style recommended by Microsoft, where the code is in the center column, any cells named within the macro are labeled in the left column, and brief descriptions of what the code means are in the right column. Here's how the macro works:

Finding Database

To see if the name *Database* exists on the active worksheet, the macro calls Excel's **NAMES** function to obtain a list of the names defined on the sheet. Using the **MATCH** function, it then searches for *Database* within that list. If there is an exact match, it returns 0; if not, **MATCH** returns the error value **#NA** to show that no value was returned.

If **MATCH** returns **#NA**, there is no Database area and the standard Sort dialog box is called up. If the result is a number, the macro needs to select the database records, which it does by using the block functions **IF** and **END.IF**.

If the macro has determined that the database exists, it can find the cells it should sort, using Excel's powerful **OFFSET** function, which calculates the location of a cell area. **OFFSET** has five arguments, starting with the **reference** argument, which gives a starting reference point for finding the database range. The remaining arguments — **row offset**, **col offset**, **height**, and **width** — describe the differences between this starting reference point and the range you're interested in.

Example 1

```
                NewDataSort
NameIndex       =MATCH("Database",NAMES(),0)          Returns #NA if name
                                                      not in list.
                =IF(ISNUMBER(NameIndex))              Database defined on
                                                      worksheet.
                =SELECT(OFFSET(!Database,1,0,ROWS     First record row through
                 (!Database)-1,))                     last data row.
                =END.IF()
                =ERROR(TRUE,BadSelection)             In case selection is
                                                      noncontiguous.
                =SORT?()                              Bring up Excel's Sort
                                                      dialog box.
                =ERROR(TRUE)                          Back to normal error
                                                      messages.
                =RETURN()
BadSelection    =ALERT("Cannot do that command on     Same message Excel
                 a multiple selection.")              gives.
                =ERROR(TRUE)                          Back to normal error
                                                      messages.
                =RETURN()
```

Example 2

```
=SELECT(OFFSET(!Database,1,0,ROWS(!Database)-1,))
```

Because the database records are in the second through the last rows of the database range, you want the calculated reference to begin one row and zero columns from the top of the database, extend down as many rows as there are in the database, and extend across the same number of columns as there are in the database. To select this range, you enter the function as an argument of the **SELECT** function, resulting in the formula given in Example 2.

Sorting the Selection

At this point, the cells to be sorted have been selected, either by the macro or by the user if no database range exists. But before calling the **SORT?** function, which calls up Excel's Sort dialog box, you need to add a trap for possible selection errors. If, for example, a user selects a noncontiguous range of cells and has not defined a database on the active sheet, Excel will display an error message ("Cannot do that command on a multiple selection") when the **SORT?** macro function is processing and will then display a second error message, prompting the user to choose between halting the macro, continuing it, or debugging it.

To prevent this scenario from happening, the macro includes the function **=ERROR(TRUE,BadSelection)**, which tells Excel to branch to the cell named BadSelection if an error occurs while it's executing **SORT?**. Then, using the **ALERT** function, you can duplicate Excel's standard error message. To restore Excel's normal error handling, use the **ERROR(TRUE)** function; otherwise Excel will continue to display the error message in response to any error, even after the macro has executed.

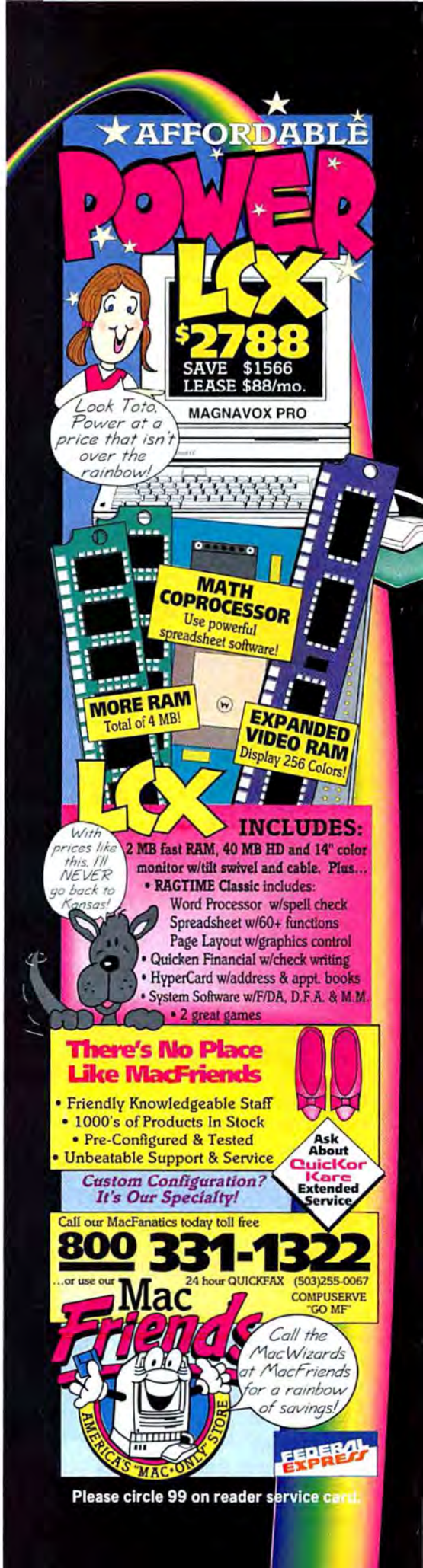
Sorting Other Areas

The NewDataSort macro works great if all you ever need to do is sort a database. But what if you want to sort another part of the worksheet in addition to the Database area? You can revise the NewDataSort macro so that it lets the user choose what area on the worksheet should be sorted. To do this, the macro first sees if there is an area called Database. If not, the macro tells Excel to display the standard Sort dialog box. If there is an area called Database, however, the macro will determine if the user is highlighting an area of cells. If so, the macro will prompt the user to choose between sorting the database and sorting the selected area. When the user has chosen, the macro displays the Sort dialog box as usual. If only one cell is highlighted, however, the macro will select the database records and then display the Sort dialog box.

The code for the revised NewDataSort macro is shown in Example 3. Because the

Example 3

```
            NewDataSort
NameIndex   =MATCH("Database",NAMES(),0)          Returns #NA if name not
                                                  in list.
            =IF(ISNUMBER(NameIndex))              Database defined on
                                                  worksheet.
            =IF(REFTEXT(ACTIVE.CELL())            Highlighting more than
              <>REFTEXT(SELECTION()))             one cell.
UseDatabase =ALERT("Sort Database records?",1)    Ask if user wants to sort
                                                  database.
            =IF(UseDatabase,GOTO(SelectRecords))  If sorting the database,
                                                  select the records.
            =ELSE()                               Highlighting only one cell:
                                                  use Database.
SelectRecords=SELECT(OFFSET(!Database,1,0,ROWS    First record row through
              (!Database)-1,))                    last data row.
            =END.IF()
            =END.IF()
            =ERROR(TRUE,BadSelection)             In case selection is
                                                  noncontiguous.
            =SORT?()                              Bring up Excel's Sort
                                                  dialog box.
            =ERROR(TRUE)                          Back to normal error
                                                  messages.
            =RETURN()
BadSelection =ALERT("Cannot do that command on    Same message Excel gives.
              a multiple selection.")
            =ERROR(TRUE)                          Back to normal error
                                                  messages.
            =RETURN()
```

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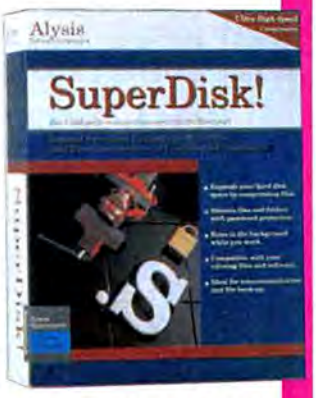
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change to this version is to allow users to sort an area other than the database, all the new code is contained between the first **IF** function, which checks for the existence of the database, and its **END.IF** companion.

To determine if the user has highlighted more than one cell, the macro needs to compare the address of the active cell (the one whose formula appears in Excel's formula bar) with the address of the currently highlighted cell range. If these two addresses are not the same, the user has highlighted more than one cell. To find out what the user has done, the macro uses the **ACTIVE.CELL** and **SELECTION** functions as arguments to the **REFTEXT** function. These functions force Excel to convert the address (rather than the contents) of each highlighted cell to text and then compare the addresses character by character. If the addresses are the same (meaning that only one cell is highlighted), the macro will jump to the line following the **ELSE** function and select the records from the database as in the previous version of NewDataSort.

If the addresses aren't the same, however, then the user must have highlighted several cells and may want to sort the highlighted area rather than the database. To find out what the user intended to do, the **=ALERT("Sort Database records?",1)** function is used in the UseDatabase cell. The macro then displays a dialog box that asks if the user wants to sort the database records. This function returns **TRUE** if the user clicks on OK. The macro then goes ahead and selects the database records. If the user clicks on Cancel instead, the macro does not stop, as you might expect; instead, it assumes that the user wants to sort the highlighted range and brings up the Sort dialog box.

Changing the Menu

The point of this add-in is to extend Excel's Sort command, so the final task in writing the macro is to tell Excel to run NewDataSort instead of its own routine when the user selects Sort from the Data menu. To do this, you need to remove the Sort command from Excel's Data menu and insert your own command in its place. So that this substitution takes place when the add-in is loaded, create a separate macro called Auto_Open (see Example 4) on the add-in sheet. The Auto_Open name is reserved for a macro that executes as the sheet containing it is opened.

The macro function for deleting commands from menus is shown in Example 5. **MenuBar** is the menu bar's ID number, **MenuName** is the text of the menu within that menu bar, and **CommandName** is the text of the command within that menu. Of the six menu bars that Excel uses, the two that affect this macro are Full Menus and Short Menus, to which Excel assigns the ID numbers 1 and 5, respectively. So to remove the Sort command from the Full Menus version of the worksheet Data menu, the function should be as shown in Example 6.

Example 7 contains the macro function for adding menu commands. The **MenuBar** and **MenuName** arguments are identical to those used by **DELETE.COMMAND**. **Command_ref** is the address of a range of cells describing the new command, and **Position** is the position in the menu where the new command should be inserted.

Example 4

```
Auto_Open
=DELETE.COMMAND(1,"Data","Sort...")          Remove default Sort command from Full
=DELETE.COMMAND(5,"Data","Sort...")          and Short menus.
=ADD.COMMAND(1,"Data",NewSortCommand,10)     Add our menu in its place.
=ADD.COMMAND(5,"Data",NewSortCommand,7)
=RETURN()
```

Example 5

```
=DELETE.COMMAND(MenuBar,MenuName,CommandName)
```

Example 6

```
=DELETE.COMMAND(1,"Data","Sort...")
```

Example 7

```
=ADD.COMMAND(MenuBar,MenuName,Command_ref,Position)
```

Making the Add-In

The macro sheet is now almost ready to save as an add-in file, but before we explain how to do so, we should mention one of the advantages add-ins have over regular macro sheets. When writing macros for earlier versions of Excel, you had to include certain "housecleaning" chores within the macro that you don't need to worry about with add-ins. For example, when a well-behaved macro application is closed, it should remove any custom commands from Excel's menu bars; otherwise, if Excel remains running, those commands are still visible to the user even though Excel can't execute them. Because the add-in can be closed only when the user exits from Excel, it's no longer necessary to remove these custom commands. Likewise, because add-ins are hidden, there's no need to worry about the macro sheet's appearance.

To save the macro sheet as an add-in, simply select Save As from the File menu, click on Options in the dialog box that appears, and select Add-in from the list of available file formats. To load the add-in, simply open it from the File menu or, if you want it to load automatically when Excel launches, put it into the Excel Startup Folder in the System Folder. In either case, Excel will run NewDataSort in place of the standard Sort command for the remainder of the Excel session.

Once you've loaded an add-in, you can't examine or edit it. However, you can get around this by holding down the Shift key as you load the file. This way you bypass both the Auto_Open macro and the special routine that loads add-ins as hidden files, so the add-in looks and acts just like a regular macro window. At this point, you can edit the add-in.

Use the Library

In addition to fine-tuning existing Excel commands, make use of the library of custom functions that comes with Excel 3.0. The file called Add-in Functions in the Macro Library folder that ships with Excel contains several useful examples, and you can read more about them in Excel's reference manual. Whether you're an occasional user or a macro expert, add-ins allow you to enhance Excel as well as build slicker, friendlier applications.

Julianne Sharer is director of application development and Steve Wexler is president of WexTech Systems, a New York-based consulting and training firm.

MacUser ON-LINE

Z MAC

Zmac Exclusive: MacUser Labs Technology Report

MacUser's motto could be "All the Macintosh news that's fit to print." However, it often becomes a case of "printing to fit." There's such a wealth of information available that we trim a lot out of each article. That's why we've spun off the first in a series of on-line columns — the MacUser Labs Technology Report — exclusively on Zmac. An insider's look from Andrew Eisner is available in the MacUser Forum's Special Reports Library (1) on a semiregular monthly basis.

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3. Dial your local access number. When connected, press Return. You'll see the following prompts on-screen. Your responses are printed in boldface type.
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 User ID: **177000,5200**
 Password: **Z*MAC**
 Agreement Number: **Z12D9014**
4. You will then be prompted for additional information, including a credit-card number for billing purposes. If you cannot bill to a credit card, call the CompuServe customer-support line listed below. Sign-up is free, but normal access time is billed at $12.50 per hour.
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TIP SHEET



Do you have an undocumented Macintosh tip you're willing to share? MacUser *pays $25 for every tip used, and the Tip of the Month earns $100.*

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You can also contribute tips electronically via Zmac, the on-line service for MacUser. *Send them to Gregory Wasson at 72511,36. Be sure to include your full name and mailing address along with the text of the tip.*

Compiled by Gregory Wasson

PageMaker

In FreeHand, if you want to repeat an item (such as grid lines that you want to be a specific distance apart), you can clone the item, move it, and then duplicate the action. PageMaker offers the same capability but requires a different set of steps:

1. Draw the item (a line, for example) you want to repeat.

2. Copy it, and paste it on top of itself by using the Option-Paste command (Command-Option-V). Move the duplicated item to where you want it to be on the page.

3. Use the Option-Paste command again. PageMaker will paste another line at the same distance as specified in the last move. You can keep using Option-Paste until you have all the lines you need.

Leslie S. Johnson Mulder
Milwaukee, WI

FileMaker Pro

After creating an address book in FileMaker Pro and using it for a while, I discovered that I couldn't remember the two-letter abbreviations for some state names. Rather than looking up the abbreviations each time I input a new address, I decided to create a predefined list associated with the State field that I could access each time I wanted to add a state-name abbreviation. You can use the following technique to add any sort of predefined list to your FileMaker Pro database:

1. Choose Define Fields from the Select menu. Select the State field (or whatever field you want to add a predefined list to) in the dialog box, click on Options, and select "Use a pre-defined value list:"

2. In the Display Values dialog box, type each state's name, followed by a Return, the two-letter abbreviation, and finally another Return.

3. Switch to the Layout mode (on the Select menu), and select the State field.

4. Choose Field Format from the Format menu. In the dialog box that follows, select the "Use field's value list to display fields as" check box and choose "pop-up list." Go to the Select menu, and switch to Browse mode.

Now whenever you select the State field to input information, a pop-up list with all the states' names and abbreviations will open. Just start typing the first few letters of the state name, and the pop-up box will automatically scroll to that state. Then use the mouse or down-arrow key to select the two-letter abbreviation following the state name, and press Return to insert it into the field.

Robb Wesche
Grand Rapids, MI

General

Several programs — FreeHand, QuarkXPress, and MacDraw, for example — let you revert to an earlier saved version of the document you're working on. Sometimes, however, you might want to look at the earlier version without losing your current version. You can save the new version, using the Save As command, but here's a faster solution: Select the entire document, and cut it before reverting to the previously saved version. Then, if you don't like the earlier version, simply delete the contents of the document and paste in the new version. If after making the deletion, you decide you prefer the earlier version after all, simply revert again to the previously saved version.

Dave Shapiro
Minneapolis, MN

Tip of the Month

Microsoft Works 2.0

The Microsoft Works database and spreadsheet modules don't round off numbers consistently—vital for teachers when assigning grades.

Here's the formula I used initially to round off grades: `=Round((B7+C7)/200),2)`. When this formula averages the test scores of 87 and 84, it rounds up the result, 85.5, to 86. But with scores of 91 and 100, the average, 95.5, is instead rounded *down* to 95. By adding a very small number (.0000001) to the formula, as in `=Round(((B7+C7)/200)+.0000001),2)`, you can force Works to consistently round up to the next-higher whole number.

Bob Kimble
Quincy, CA

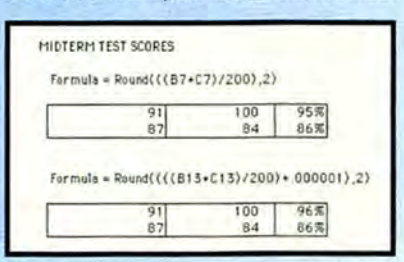


Figure A: Microsoft Works' spreadsheet and database modules don't always round up numbers consistently. For example, the average of 91 and 100 (95.5) is rounded down to 95 whereas the average of 87 and 84 (85.5) is rounded up to 86 (top). You can get consistent results just by adding a very small number to the normal formula (bottom).

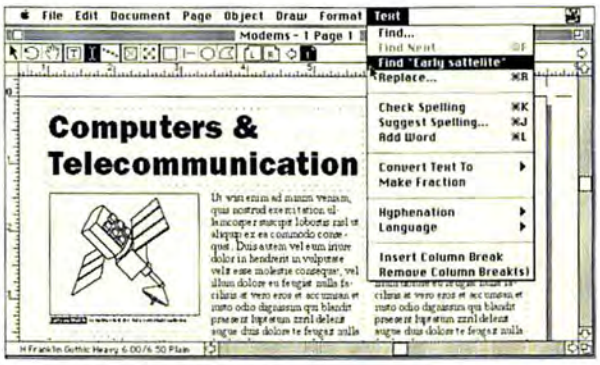


Figure 1: DesignStudio's Find Selection command lets you see hard-to-read text quickly by displaying up to 20 characters on the menu.

DesignStudio

If you need to check a small portion of text in DesignStudio but it's too small to read on the screen, select the text (up to 20 characters) with the I-beam tool and pull down the Text menu at the far right of the menu bar. The Find Selection command displays your selected text on the menu so you can read it (see Figure 1). You save time doing it this way rather than changing the page magnification, which redraws the entire page.

Jonathan Macagba
Philadelphia, PA

Persuasion

If you find the arrowheads in Aldus Persuasion too large for your taste, you can change their size by changing the length of the line to which they're attached. On longer lines, Persuasion consistently makes the arrows the same size, but by adjusting shorter lines, you can obtain a variety of sizes.

Draw the line in the position you want, and make it the length you want. Instead of choosing the arrow style from the Effect menu and applying it to your line, draw a shorter line off to one side, make it the arrow line, and then adjust the length until you get the arrowhead size you want. Copy and paste this arrowhead on top of the first line. You can also create a selection of arrowheads and copy them to the Scrapbook so you can use them later. Be sure to create them pointing in different directions.

George E. Thompson
Chicago, IL

Norton Utilities for the Macintosh

Although Norton Utilities' Fast Find command is extremely speedy, you can make it work even faster if you hold down the space bar while it's searching — this stops the animated sprinting-man icon.

Michael D. Bourgon
El Paso, TX

Extra ADB Port for the New Macs

Because the Mac Classic, LC, and IIsi have only one ADB port, you can't plug in more than one pointing device. To get around this, replace the coil cable on your keyboard



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with the cable that comes with Sophisticated Circuit's PowerKey. This cable is an L connector you can plug into the back of your Macintosh (where you would normally plug in the keyboard) that gives you an extra connector for a pointing device. Plug one end of the connector into the back of the Mac and another into the keyboard. Plug your mouse (or other pointing device) into the other ADB port on the keyboard, and plug your second pointing device into the second connector on the PowerKey cable.

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Sven Nielsen
Saratoga, CA

Tips from the Experts

Excel 3.0

The folks at Microsoft recently sent us some information on something other than Word 4.0! Here's a tip for the newest version of Excel:

Aligning Number Formats. It's possible to modify noncurrency number formats in Excel 3.0 so that they align properly with currency formats by using the Format Number command. In previous versions of Excel, the numbers in noncurrency cells didn't line up properly with cash or currency numbers in columns. This was because positive numbers formatted as currency included a space the width of a right parenthesis so that they aligned with negative currency amounts, which are always enclosed in parentheses.

In order to avoid encountering this problem in Excel 3.0, select the noncurrency number cells and choose Number from the Format menu. After the number format, which appears in the Format box, type an underline character and a right parenthesis: _).

When you press Return, the noncurrency and currency numbers should align properly (see Figure B). Note: This tip does not work with the General number format.

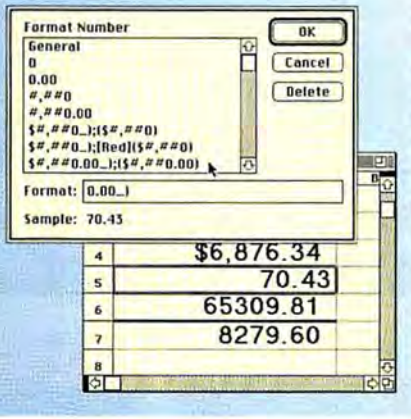


Figure B: Numbers in currency and noncurrency formats don't line up in Excel when you input the numbers. You can fix this problem in Excel 3.0 by using the Format Number dialog box.

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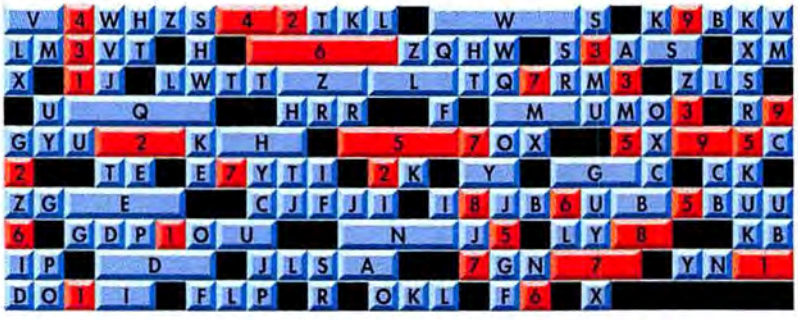
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Microsoft Works 2.0

Here are some undocumented navigation tips for anyone who is using Microsoft Works 2.0 without an extended keyboard:

•To go to the top of a document, press Command-A.

•To go to the end of a document, press Command-D.

•To move up approximately one page at a time, press Command-K.

•To move down one screen at a time, press Control-L.

Matthew D. Meara
Columbus, OH

Double Helix

When I use Double Helix, I often want to look at two *collections* (the Double Helix word for *databases*) simultaneously. Double Helix can open only one collection at a time. Although Odesta has copy-protected the program so that copies with the same serial number cannot run on a network at the same time, you can run duplicate copies of Double Helix on one computer under MultiFinder with no problems. Just copy the program by using the Duplicate command on the Finder's File menu to make as many copies of Double Helix as you need. You can then open the copies under MultiFinder. Of course, you need generous amounts of RAM to make this work.

David Koelzer
Fairfield, IA

The Finder

To organize your files so they appear vertically in the window, you have to view them by name, date, size, or kind — not by icon or small icon. The advantage of tall, thin windows

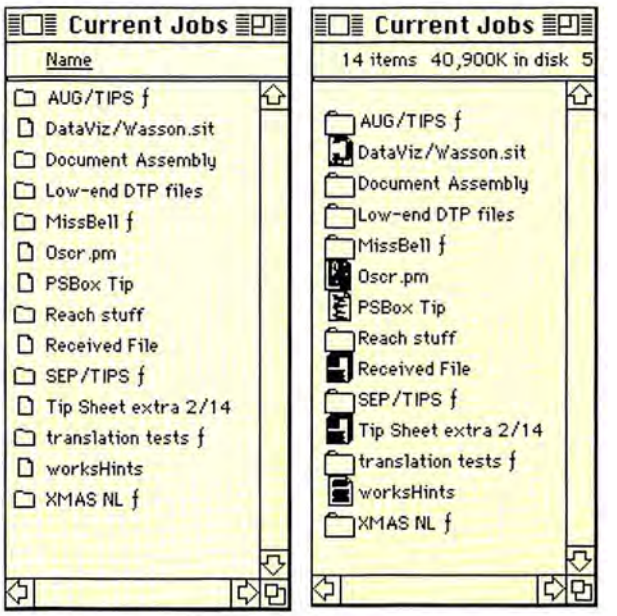


Figure 2: Viewing by name saves desktop space by letting you have tall, narrow windows (left). You can combine the best of this view and View by Small Icon so that you can see your disk size too (right).

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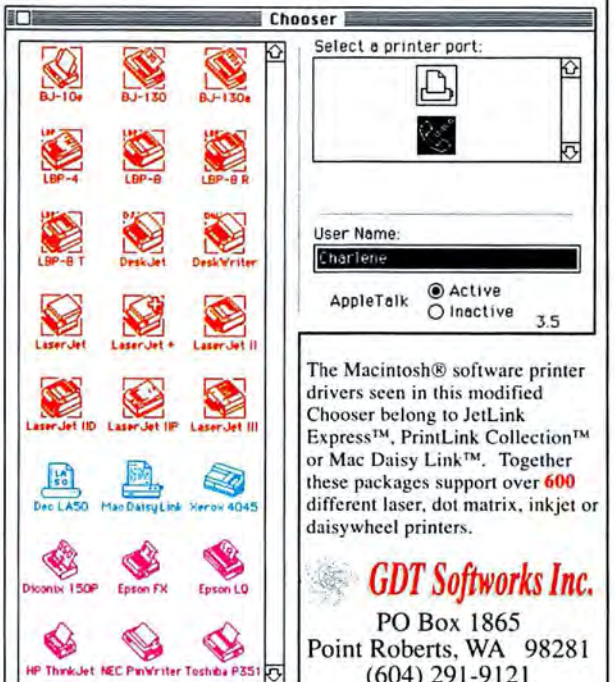
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Tips from the Experts

Nisus 3.05

Paragon Concept's tech-support experts share some tips about their word processor that make Nisus even nicer.

Nonbreaking Spaces. Sometimes you don't want a sequence of characters that includes spaces to break between lines at the spaces (for example, in a mathematical equation). You can avoid this in Nisus 3.05 by using an Option-space (called a nonbreaking space in other programs). To create such a space, hold the Option key down while you press the space bar.

If you want to globally change the spaces within a selection to Option-spaces, you can do so by creating the following one-line macro:

1. Choose New from the Macro submenu, on the Tools menu.

2. Type the words `Find/Replace`, followed by a space. Type a pair of straight (dumb) quotation marks with a space between them. Type a second pair of quotes, this time with an Option-space between them. Type a final set of quotes containing an `s` (this tells the macro to replace the spaces in the current selection only).

 Your macro should look like this: `Find/Replace '' '' '' '' ''s''`.

3. Save the new macro, and assign a key to it. Select the text that you want to change, and invoke the macro with this key.



Figure C: Hold the Command key down while you click on the title bar of any window in Nisus 3.05, and the Windows menu pops up on-screen, letting you quickly jump to any other open window.

Doing Windows. Here's a tip that's very useful if you have several windows open simultaneously. Press the Command key, and click on the title bar of any window (including the Catalog and Macro windows). The Windows submenu (which you ordinarily access on the Tools menu) will pop up and show you which windows are open. You can then access any window by double-clicking on its name on the Windows submenu (see Figure C).

Zooming the Unzoomable. Sometimes you might position a window on the screen so that its zoom box in the right corner of the menu bar (for resizing) is off the screen. However, Nisus lets you use the zoom box — even if it's off-screen — simply by double-clicking on the window's title bar. This is true for all

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of your windows, including the Macro, Glossary, and Catalog windows.

Making Smart Quotes Stupid. If you use smart quotation marks a lot, you should probably set up your Editing Preferences with Smart Quotes checked. Then whenever you type an ordinary quote (double or single), the correct curly quote will be substituted automatically. Sometimes, however, you want to insert straight quotes (when using the symbols for feet or inches, for example). Rather than going to the Editing Preferences menu and changing the settings each time, all you have to do is hold the Command key down while you type the quotes. Holding down the Command-key modifier reverses the Smart Quotes setting for that entry.

is that you maximize the number of windows you can have open on your desktop. However, because my 40-megabyte hard disk always seems to contain 38,456K of data, I need to see the available disk space, which is possible only if I view by icon or small icon, neither of which lists files vertically.

My solution: Depending on how you want the files listed in the window, choose View by Name or View by Date (or one of the other vertical views), select all the items in your window, move them to the desktop (which forces them to be displayed as large icons), and then switch the View mode of the window you just emptied to Small Icon. When you bring your still-highlighted selection back to the window, your files will stay in the same vertical order you had before but you'll have slightly larger targets to click on *and* you will be able to view your disk size in the top right corner of the window (see Figure 2).

Scott A. Farley
Seattle, WA

Word 4.0

Microsoft Word is a great tool for making tables to export into page-layout and drawing programs. To capture the table's borders and cell relationships, you must use Word's Copy as Picture command (Command-Option-D), but this command doesn't work properly when you want to include text that is not part of the table with the table (as a title or caption, for instance). Here's a workaround:

First, move the table away from the header or caption to another part of the document. Select the table, choose Copy as Picture, and paste the picture where the table was before you moved it. Select the picture you just pasted, along with the accompanying title or caption, and choose Copy as Picture again. The whole thing can now be pasted into the DTP or drawing program, and you still have a copy that's suitable for editing in your Word document.

At first glance, it may seem easier just to make the caption or header part of the table by putting the text into a table cell, but because this involves deleting columns, repositioning cell boundaries, removing cell borders, and applying styles, it's generally quicker and easier to use the two-step Copy as Picture solution.

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Minnetonka, MN

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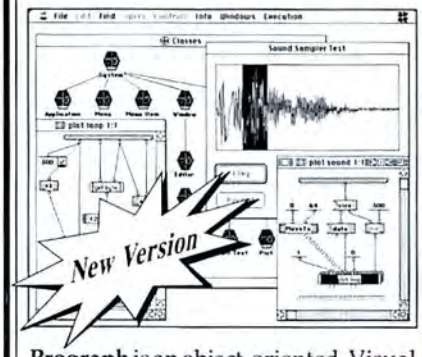
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By Bob LeVitus and Andy Ihnatko

Fixing Your Formatting

Q. I often download text files from my company's DEC VAX mainframe onto my Mac. These files are 132 columns long and look like a spreadsheet. When I list the files using my terminal emulator, the report looks fine. However, after I download the file and try to edit it with MacWrite, the character spacing seems to have taken on a life of its own. What's happening here?

Steven A. Duhon
Chicago, IL

Andy: If there were a Hall of Fame for common questions, Steven, I promise that your question would be enshrined in its first year of eligibility. Almost everyone has asked this question at one time or another.

The problem is this: The data you got from the VAX was formatted for use with a monospaced font, such as the one your terminal emulator uses. In a monospaced font, all characters are the same width (a *W* is as wide as an *i*, a comma, or a space). This lets you line up columns by eye, inserting spaces between elements until they look right. It'll always print out properly — as long as you use a monospaced font, such as Monaco or Courier. Switch to a proportional font (most fonts used with the Mac are proportional), and you're in trouble. Because every character in a proportional font has a different width, those perfectly formatted columns become ASCII spaghetti in MacWrite.

The simple solution is to switch to a monospaced font when you open the file in MacWrite. Everything should line up in perfect columns, just as it did in your terminal-emulation program.

The best solution, however, is to format the columns with tabs rather than spaces. That way, you can use whichever font you want without messing up the formatting. Numerous shareware programs change sequences of spaces to tabs (see Figure 1). The most popular is the freeware program Add/Strip, which also performs such niceties as stripping out control characters and changing straight quotes and apostrophes to the correct, curly variety. But when you're dealing with a text file formatted in columns, the best choice is David Craig's

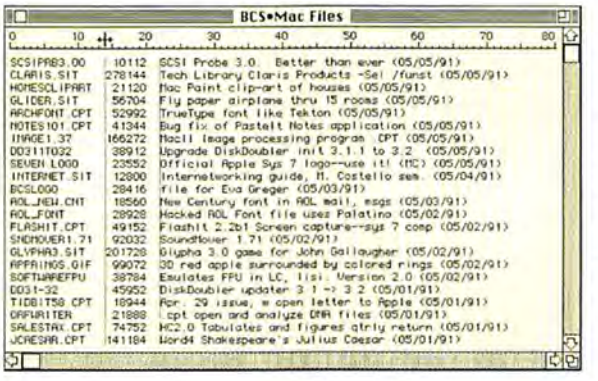


Figure 1: The best way to line up columns of information is with tabs rather than spaces — that way the columns always line up, no matter what font you're using. Add/Strip and Columnbo are a couple of programs that automatically replace spaces with tabs. Columnbo is shown here in action: The two vertical dotted lines represent where tabs will go in the reformatted file.

✻ . . . But Were Afraid to Ask

Obviously, *MacUser* sends most of its subscription forms to Brainiac-5 types who need to know only about 68040 bi-redundancy codes — but take heart. We at Help Folder also appreciate those simple questions that allow us to write simple, patient responses and then go to bed early. If your question is *so* simple or odd that you're ashamed to even ask, we'll say it was sent in by a whimsical character from the Beatles' *White Album.*

Q. A shareware game I play a lot (1,000 Miles) uses a set of black-and-white icons. Using ResEdit, I added an icl4 resource and colorized these icons. Is there any way to tell the program to use these color icons instead of the black-and-white ones? I'm obsessed with color now that I've traded up from a Mac Plus to a IIsi.

Rocky Raccoon
Disc 1, Track 13

Andy: Precisely which planet are *you* from? Are you really trying to tell me that you think it's possible to get extra functionality out of a computer-related item without having to send someone a little extra cash?

Unfortunately, if a program hasn't been designed to use color icons, it can't use 'em . . . period. When Apple added support for color icons, it created an entirely new QuickDraw data structure for the icons called *CIcons* and three new QuickDraw routines to support them called *GetCIcon, DisposCIcon,* and *PlotCIcon.*

The color-icon functions are nearly identical to those for black-and-white icons, so you may wonder why Apple bothered to make such a blatant distinction between the two. My guess is that the company didn't want to create any compatibility problems with old software. That's why Apple gave us System 7, after all.

Columnbo (the name alone is worth the $15 shareware fee). Just open the file and click where each column begins, and Columnbo exports a new text file properly formatted with tabs. Both Add/Strip and Columnbo are available from on-line freeware and shareware sources such as Zmac or from user groups.

Word Identity Crisis

Q. When I bought Microsoft Word 4.0, I ran it for the first time directly off the master disks. Word asked me for my name and the name of my company and, not thinking, I just typed in any old garbage.

When I installed Word onto my hard drive, I found I was stuck with the information I'd entered on the master disks. How do I fix this?

Wayne Young
Thirroul, Australia

Andy: I don't *want* to have to remind you of this, but they'll probably take away my official Mr. Know-It-All propeller beanie if I don't, so here we go: *Never run a program directly from a master disk.* The whole point of having a master disk is to be sure that no matter what boneheaded thing you do to the program, you'll always have a pristine copy tucked away. This gives you the highly sought-after sensation that your butt is covered.

OK. That garbage registration information you entered is stored in the data fork of Word itself, so you can fix things pretty easily with a disk editor such as Symantec's SumTools (part of SUM II). You can't input a new serial number, but you can reenter the Name and Company info. Here's how: Launch SumTools, and from the File menu, select Edit File. Choose the program you want to fix. To make sure you're editing the program's data fork, go to the File menu, choose Which Fork, and select Data Fork (you know you're editing the data fork if you see the current registration information on the right side of the window). Then, from the File menu, select Set Logical End-of-File. In the dialog box that appears, type **0** in the empty box next to New Logical EOF (see Figure 2). Click on Set EOF, save your changes, and quit. The next time you run the program, Word will think it's not registered and will ask you to reenter your name and company information.

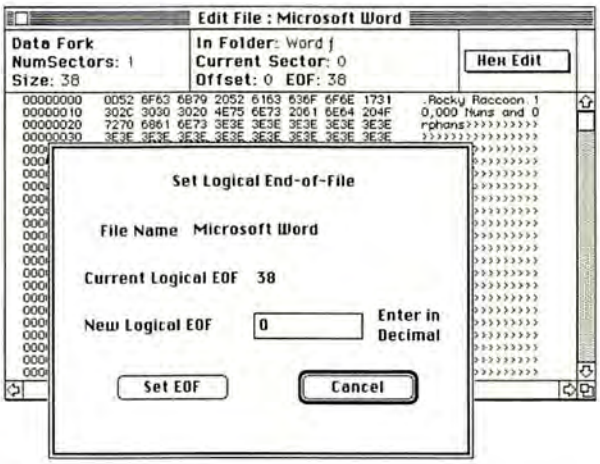


Figure 2: Need to change your identity? If you've entered incorrect information on a program's registration dialog box, you can use a program such as Symantec's SUM Tools (part of SUM II) to erase the information. When you launch the program again, you'll be asked to reenter your name and company information (you can't change the serial-number information, however).

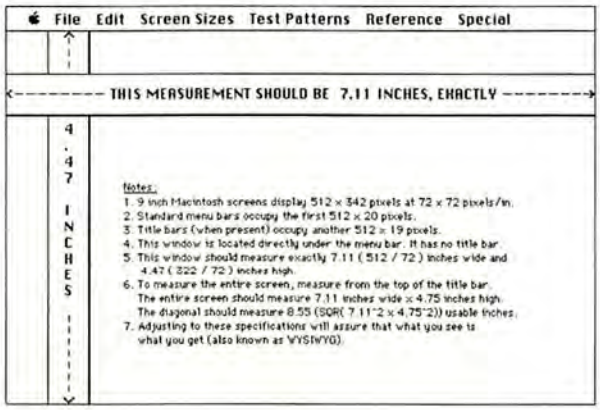


Figure 3: If you're going to muck around adjusting your monitor, get a copy of Larry Pina's shareware program Test Pattern Generator. This program not only helps you size the display properly but it also gives you test patterns to help you adjust the display's linearity, focus, brightness, and contrast.

Screen Real Estate Poached?

Q. Ever since I got my Mac Plus a couple of years ago, there's one question I've wanted answered: Is there some way that the Mac's 9-inch screen can actually give you a 9-inch-diagonal display? The black band on the perimeter of the display, which takes up one third of the surface area, is extremely annoying. Is there some electronic reason for this, or is it just "narrow"-mindedness?

E.D. Sewell
Upper Darby, PA

Andy: Well, E.D., it actually has something to do with the solution to the infamous Beale Cipher, the as-yet-uncracked code that reveals the location of billions of dollars in gold and silver buried somewhere out West. But as I don't want anyone to get to the treasure before I do, I'll just give you the technical explanation.

If you had text right on the border of the display, it'd probably be too fuzzy to read. The electron beam has to travel farther to get to the edges of the display than it does to get to any other part of the screen. As a result, it has trouble holding focus. Also, surface aberrations in the screen tend to be most pronounced at the corners. In fact, this is one of the best ways to determine the quality of a display: If it provides a nice, sharp image at the corners, you can be sure it's a top-quality screen.

If you're a Mac II user with an Apple-brand color card (such as the Macintosh Display Card 8•24 GC), you can reclaim some of that real estate with a freeware INIT called MaxAppleZoom (available from user groups and other freeware sources). This INIT extends more pixels out into the no-man's-land at the edge of the screen. But for Plus owners, well, if it bothers you that much, there are well-labeled adjustment knobs inside the Mac (along the left side) that control the vertical and horizontal size

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of the display. Equipped with the specialized tools required to open the case, you could conceivably enlarge your display a mite, but you'd be doing it at your own peril and you should try it only if you know what you're doing.

Bob: If you're going to muck around adjusting your monitor, you need to be careful not to mess up the aspect ratio. For best results, use a program such as MacPaint to draw a perfect square on-screen. You can then judge how much you need to adjust the display's horizontal and vertical display by the square's appearance.

Also, you should find a copy of Larry Pina's excellent shareware program Test Pattern Generator, which comes with his book *Macintosh Repair & Upgrade Secrets* (Carmel, Indiana: Hayden Books, 1990). It contains a mechanism to assist you in sizing the display properly (see Figure 3) plus test patterns to help you adjust linearity, focus, brightness, and contrast.

The INIT That Would Not Die

Q. I've been carrying around a piece of software baggage for the past five years that I desperately want to get rid of. The software in question is the INIT JClock, which puts a clock onto the menu bar. I thought it was great back when Reagan was president, but my affection for it has waned considerably over the years (same goes for Reagan).

I've looked in my System Folder and elsewhere for a JClock file to throw out, but I can't find it anywhere, not even when I use Find File. How do I get rid of this useless thing?

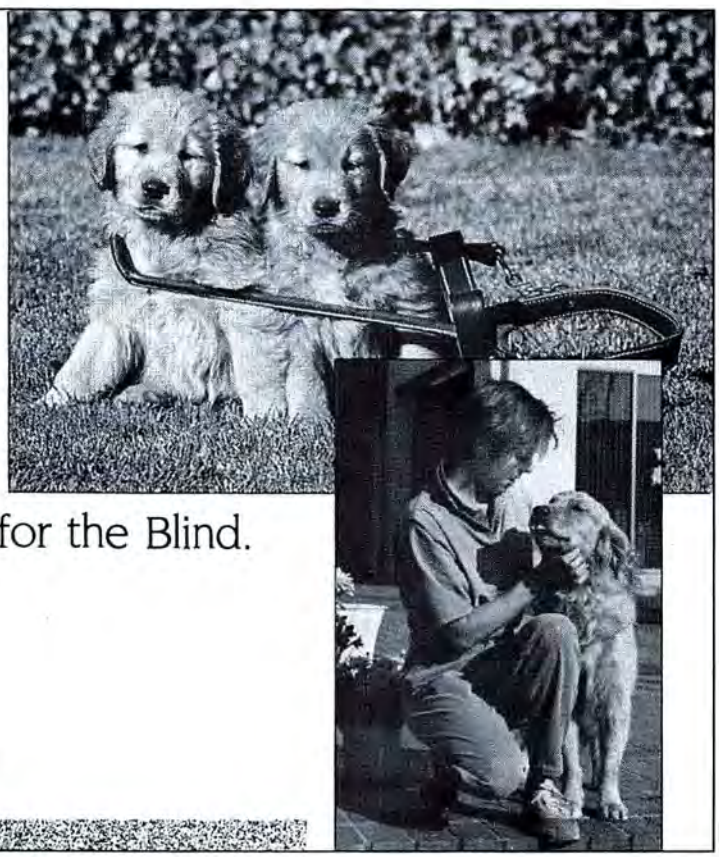
Steve Thompson
Easton, MA

Andy: You're probably using an old, old, old version of JClock. See, nowadays the System has a standard mechanism for loading and running INITs, called the INIT 31 mechanism. You just drag INIT files into the System Folder, and the System automatically finds the INITs and runs them at every startup. However, in the old days, INITs were low-level resources that actually had to be installed *inside* the System file, much as fonts and DAs were before System 7. Typically this was done either with ResEdit or with a special program that came with the INIT.

So to get rid of JClock (or any other System-installed-INIT-from-Hell such as ScreenSaver), you have to restart your Mac from a floppy disk and use ResEdit to seek and destroy the foul code. After you've launched ResEdit, double-click on the INIT resource in a copy of the System file (move the original System file to a safe place, just in case), and you'll see an INIT named JClock. Click on that INIT, select Clear from ResEdit's Edit menu, save, and restart. Simplicity itself.

Before we go on, however, I am contractually obliged to deliver the standard ResEdit harangue, so here goes: ResEdit can be a wickedly destructive program. Use it only to edit backup copies of files and applications. You should never use ResEdit on active System files or applications. Failure to do so will inevitably result in spontaneous decapitation.

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SE Screen Shimmy

Q. A few months ago, I installed a 40-megabyte internal hard drive in my SE. Periodically the screen shakes. Can this harm the hardware? Should I have purchased an external drive instead?

Tracy Swan
Lake Charles, LA

Andy: The answer depends on what you mean by "the screen shakes." If you mean "The lower part of the screen seems to warp a bit when the drive is being accessed but then goes back to normal," I'd say that the drive is causing magnetic interference with your screen. The magnetic field in the hard drive (normally shielded) is "pulling" at the electrons as they're being fired at the glass, resulting in a wacky '60s-type lava-lamp effect. Annoying but no real hazard to your hardware. As to the causes, well, it could be the result of a drive that is a lot "noisier," magnetically speaking, than normal, or it could be that there was a problem when the drive was installed. I'd call the company I bought the drive from and ask if other customers have had similar problems and if so, what you can do about it.

However, if you mean "The top corner of the screen twitches occasionally" and your SE was manufactured in 1987, check to see if it has the original reed-type fan. These fans caused some early SEs to develop an irritating shimmying defect, which Apple agreed to repair at no charge when SE owners appeared in Cupertino with torches and pitchforks. As I recall, the condition was cause more for annoyance than alarm, but you may want to have the problem attended to.

Finally, if you mean "The screen breaks up into a snowlike mess, and sometimes I hear a high-pitched whine," then it's likely that your power supply is in bad shape. In this case, there's a real hazard to your hardware. Although you may get lucky (ha!) and just lose power to your Mac, you should know that a bad power supply can fry your whole computer, not to mention wreck your whole day, so get thee to your neighborhood Apple dealer — pronto!

Although the shimmying could be just a minor annoyance (such as when it's caused by interference), it should generally be treated as a potentially Mac-crippling problem, so have a technician check it out. And don't forget that, according to Apple's standard warranty card, if technicians tell you, "Oh, they all do that," you're allowed to poke them right in the eye.

On to the subject of internal versus external drives, internal drives have obvious advantages: They take up zero space on your desk, they require no additional cables, and they're generally less expensive than external drives. I, however, have always preferred external drives, mainly because you can move them from machine to machine. Also, when your SE's power supply finally does explode, the SE can go to the shop while your hard drive stays home, ready to be hooked up to another Mac. It works the other way around too — a malfunctioning hard drive won't leave you without a Mac, because you'll still be able to

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work from floppies. Well, maybe not *work*, but you'll still be able to get Tetris up and running, which is better than nothing.

Bob: Excellent advice. I disagree only on one point: I don't recommend going around poking technicians in the eye. A better technique is to loudly proclaim, "To hell with this! I can buy an IBM clone and Windows 3 for one-tenth the cost of a similarly equipped Mac!"

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Why Do I Quit Unexpectedly?

Q. I use an SE/30 with 5 megabytes of RAM and am using MultiFinder with System 6.0.5. Every once in a while, the application I'm using will quit for no apparent reason and I get a message saying, "The Application has unexpectedly quit (1)."

Why does this happen? What does (1) mean? I can't find an answer in any of my reference books, and this can be disturbing, because I lose all changes I made since my last save.

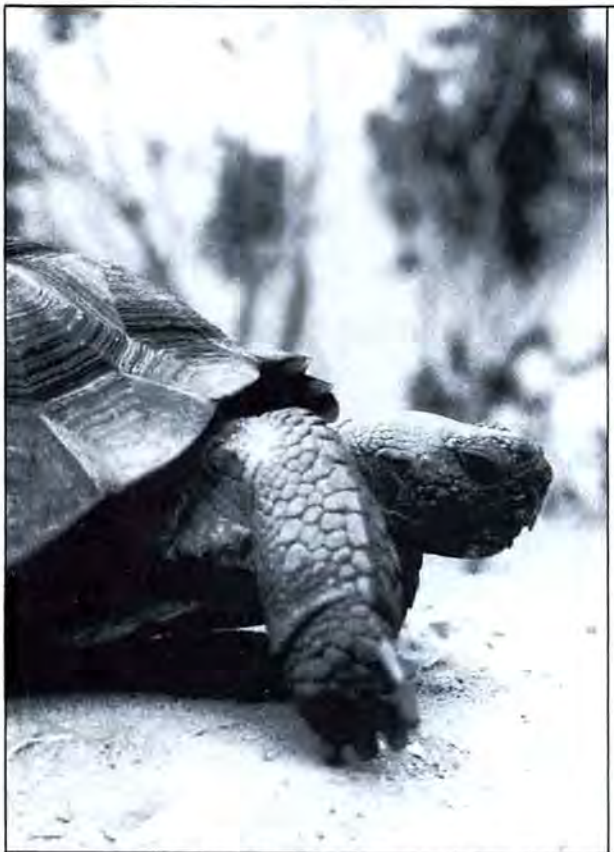
Eric Caspole
Arlington, MA

Bob: Unexpectedly quitting under MultiFinder is similar to bombing under the Finder, but since I don't know what (1) means and I can't provide a technical explanation suitable for a family magazine, I turned to Apple's Chris Espinosa, Help Folder author emeritus. According to Chris, with System 6.0.5 under MultiFinder, the "Application has unexpectedly quit (1)" error is a system bomb that isn't serious enough to cause the entire machine to crash but one that terminates that application. Other applications continue to run, and you won't lose any data from these applications. The (1) is identical to the ID=01 error ID that appears in a standard system crash.

Of course, with Systems 6.0.7 and 7, Apple has replaced the meaningless error-ID numbers (1, 2, 12, 25, and so on) with meaningless phrases such as "Co-processor not installed," "Bus error," and the ever-popular "Address error." Not only are these phrases meaningful only to people who understand the internal architecture of the 68000 microprocessor family (and therefore fairly useless to the average Mac user) but they also often have nothing to do with the cause of the problem.

As Chris puts it, a system crash is like finding a car crashed against a tree. "Address Error" is a crushed bumper, "Stack collided with heap" is a broken windshield. Neither the crushed bumper nor the broken windshield will give you the *cause* of the crash — they're usually just things that happen as a *result* of the crash. Only by using debugging tools during the crash can a programmer or tester find the actual cause of the crash and fix it.

One last thing: Whenever an application unexpectedly quits, be sure to save any documents that are open in other applications and restart your Macintosh. Unexpected quitting is a signal that something is seriously wrong; saving and restarting will minimize the likelihood of further trouble.



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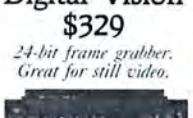
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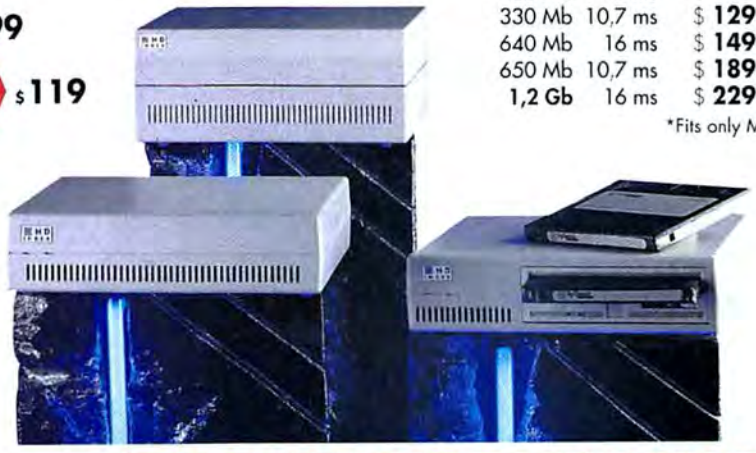
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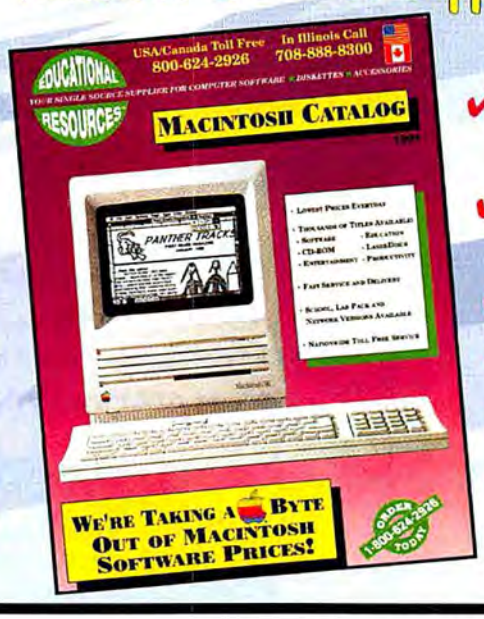
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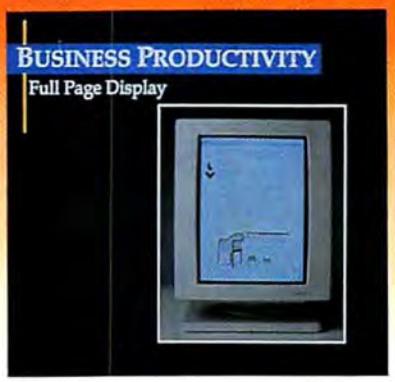
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- ☐ s) Database Managers
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- ☐ u) CAD/CAM
- ☐ v) Communications

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- ☐ x) Mini
- ☐ y) PC
- ☐ z) Printers/Plotters
- ☐ 1) Monitors
- ☐ 2) Disk/Tape Back-up
- ☐ 3) Add-in Boards
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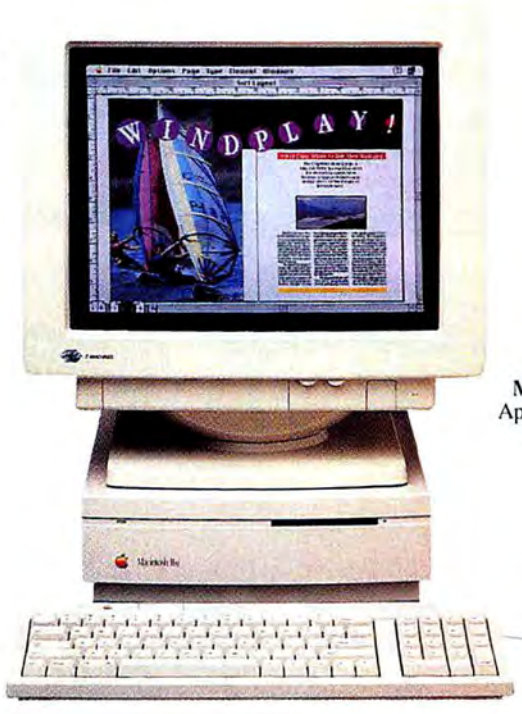
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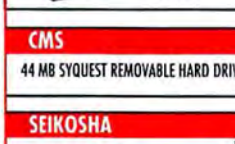


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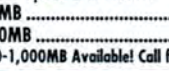
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- MOUSEMAN 79

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- LITTLE MOUSE ADB or MAC PLUS 79

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- SYSTEM 7 BOOK 19

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- DESK 199

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- MARIAH 89

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- DESK PAINT AND DRAW 99

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INSIGHT DEVELOPMENT
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- FORTRAN WITH MPW 398
- WILD THINGS 119

MAGNA
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- MACPALETTE II 55

MULTI AD SERVICES
- MULTI-AD SEARCH 108

SALIENT
- DISK DOUBLER 42

SERIUS
- SERIUS DEVELOPER 324
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SOFTWARE COMPATABILITY
- SOFTWARE BRIDGE 75



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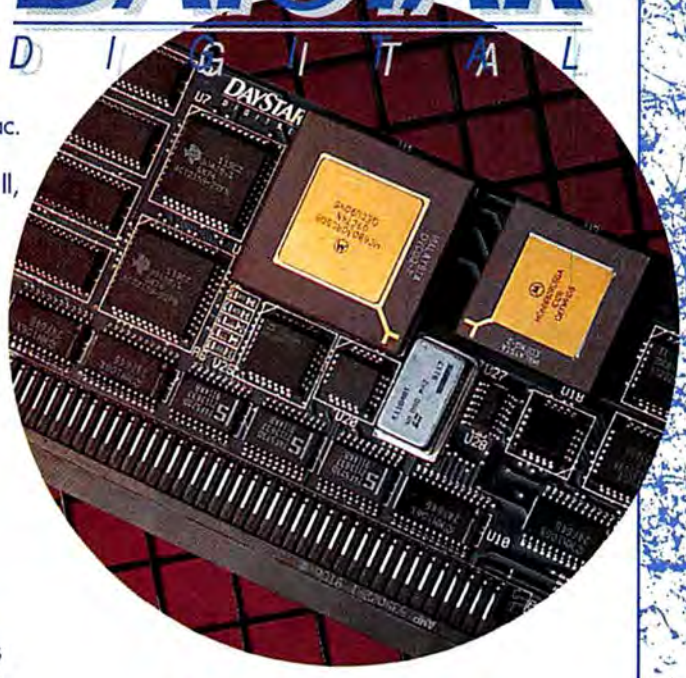
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with IIci 64k Cache Card add		$5
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Quantum mechanisms. 2 year warranty.		
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210 MB	$799	$24
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600 MB Wren Runner	$2199	$69
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600 MB Sony ISO	$3199	$96
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Includes Retrospect. 2 year warranty.		
MagicTape 60 MB	$679	$21
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MagicTape 525 MB	$999	$30
MagicTape 1.3 gig DAT	$1695	$51
MagicTape 2.6 gig DAT	$1895	$57
MagicTape 2.4 gig 8mm	$2895	$87
MagicTape 5.0 gig 8mm	$4499	$135
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Chinnon CD ROM	$579	$17
NEC CDR 36 Portable	$485	$15
NEC CDR 73	$699	$21

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Radius Direct Color 24 board	$2559	$78
RasterOps 24 STV	$1289	$39
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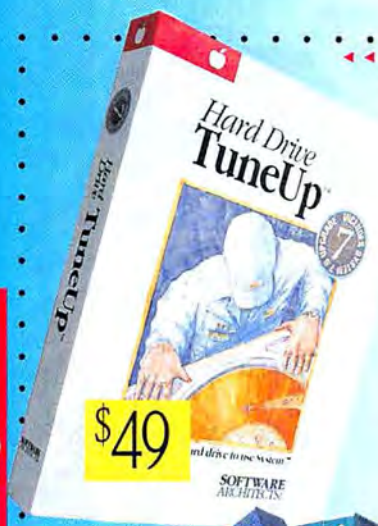
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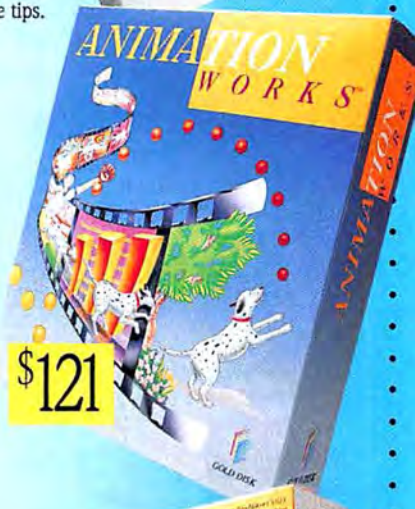
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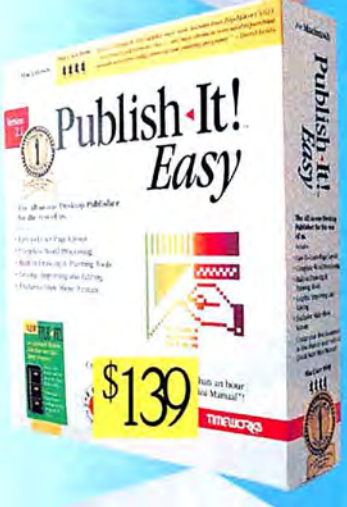
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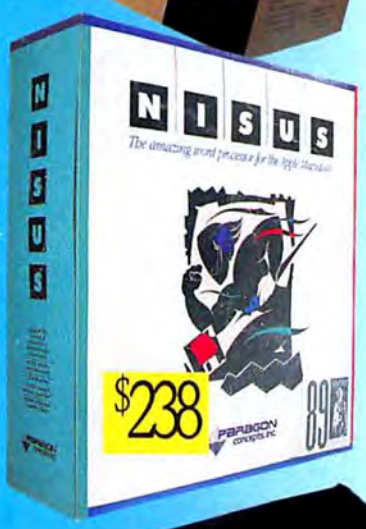
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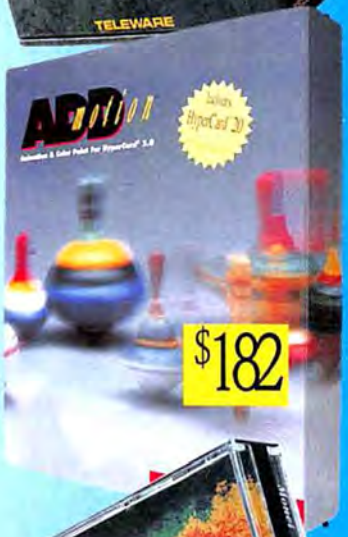
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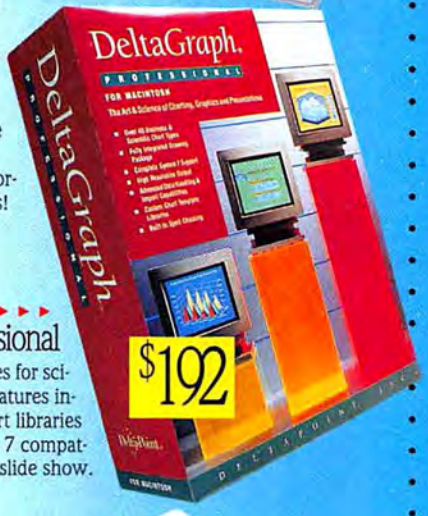
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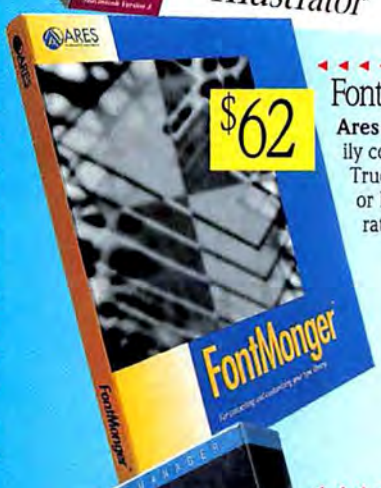
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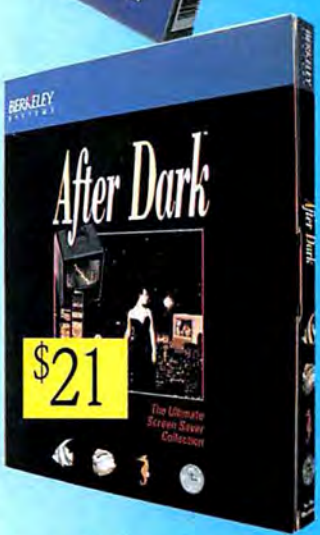
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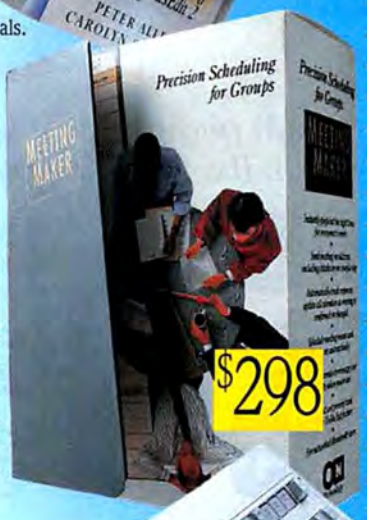
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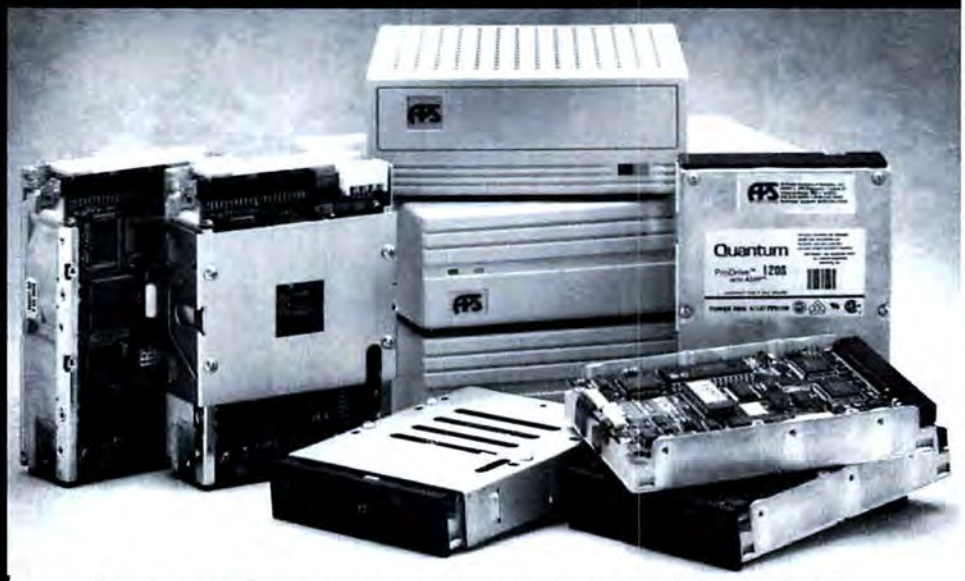
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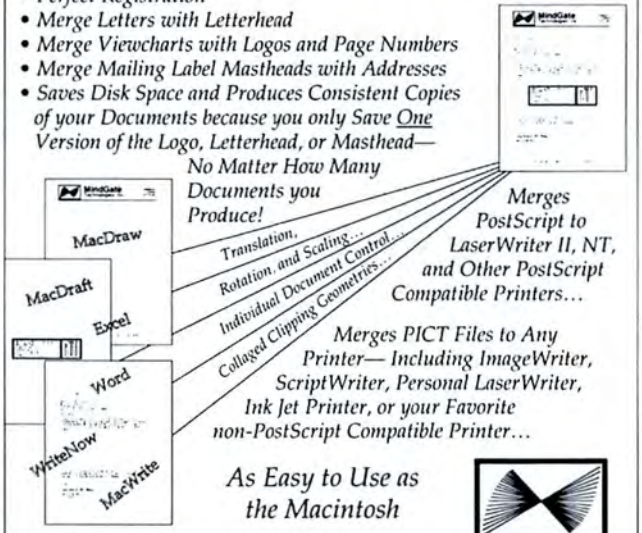
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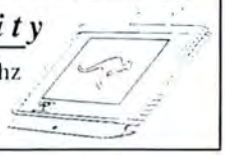
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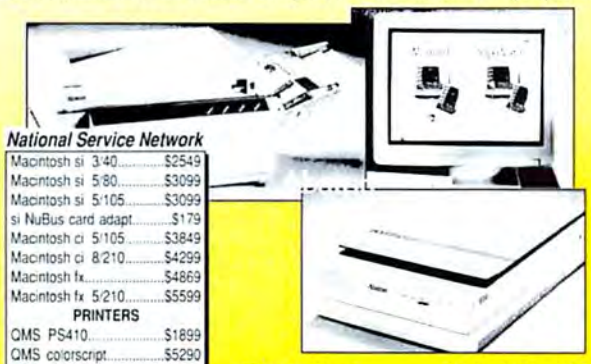
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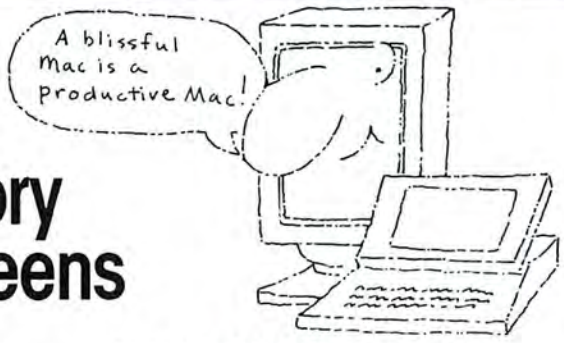
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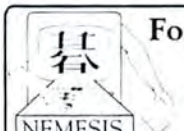
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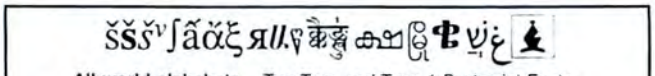
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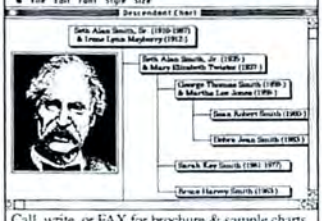
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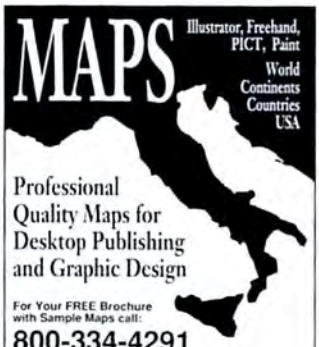
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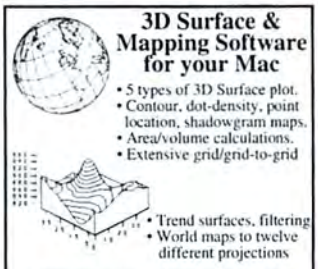
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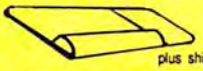
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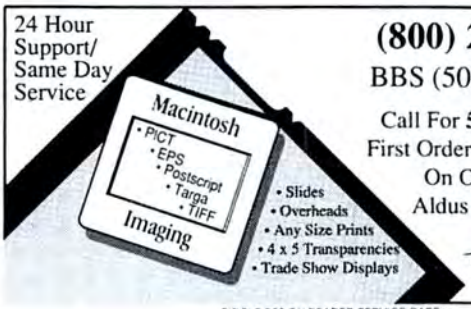
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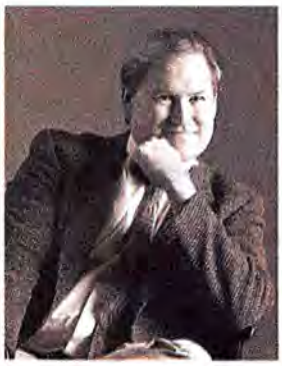
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The Classic Rage



That old Mac magic's got us in its spell, that old Mac magic Sculley weaves so well — but can we finally dump the old Mac design? Please?



When I saw John Sculley in the video press release for System 7 (Apple's new operating system for the Macintosh), I realized how much he's beginning to look and sound like the shuck-and-jive astronomer Carl Sagan.

A few months before System 7 was announced, Carl Sagan was predicting the end of the world from the oil fires in Kuwait. But then a couple of scientists who know the meaning of the word *supercomputer* told everyone that *their* atmospheric models didn't support Sagan.

In fact, their models indicated that Sagan was blowing more smoke than the wells, and that the fires would be a local — rather than a global — mess. I suspect that Sagan's publishers then quashed a proposal for another gloom-and-doom book to be authored by Dr. Sagan. How embarrassing.

I wonder if Sculley is using the same song-and-dance approach with the Mac Classic.

As a convincing salesman, Sculley is reminiscent of Sagan. (Judging by the way he's getting his hair cut nowadays, Sculley must be something of a fan of ol' Carl.) The Mac users who've fallen under Sculley's magic spell (a more formidable psychic force, I'll bet, than what Steve Jobs could ever conjure up) can't imagine where the truth ends and the BS begins.

Even I have finally succumbed. I can't figure out what's going on at Apple either. I feel, when Sculley beams with his benign tortoiselike demeanor, that it's impossible to *ever* think that he's full of bull. ("He can't be — he's a turtle!") But what I know is that there is a lot of discrepant information cropping up, especially concerning the surprisingly (surprising to me at least) popular Mac Classic.

Classic Ploys

I heard the first odd rumor a few months back. It seems that someone roaming around the Apple offices stumbled upon a memo that said that Apple was having to scramble to fill orders for nearly 200,000 Mac Classics that hadn't yet been manufactured, much less shipped.

The story goes that Apple was going to try to get dealers to bait-and-switch people who wanted to buy a Mac Classic. The dealers were supposed to talk buyers into purchasing a higher-priced Mac LC or Mac IIsi. (Actually, I hate to use the term *bait-and-switch* here. As far as I'm concerned, people who are in the market for a low-end computer should be buying the Mac LC instead of a Classic anyway — even if they have to take out a loan. The LC is the first Mac I immediately liked. But I digress.)

Now I hear from computer suppliers that the Classic has filled the pipeline and is clogging it up. Apparently everyone who wanted a Mac Classic got one right away. So the thing will now languish on the shelves, soon to be discounted and dumped.

Apple may completely abandon the original Mac design and move to the LC look. I think the funky-looking original Mac, even with the more modern SE touches, looks as dated as a '56 Nash. It's time it was buried.

I've discussed this with old-timers who still cart this pathetic clunker around in one of those padded Apple Mac totes. They say it's the greatest design ever. Of course, they're nuts. If you want to roam around an airport looking like a real bozo, then load an old Mac into one of those padded bags and hit the concourse. The last time someone brought one into San Francisco International, it was announced over the PA system and everyone laughed and pointed.

To make matters worse for the old Mac-clunker, there's the issue of the Classic's belatedness. Years ago, while flying business class, I sat next to an oblivious young Apple executive who was listening to a Walkman. (It was so loud — through the headphones! — that I had to ask him twice to turn it down. He's probably deaf by now.) Anyway, this guy was carefully reading and annotating a memo that outlined the Mac Classic strategy. There, before my eyes, were all the numbers and even a discussion of the Singapore manufacturing facility. (As I reclined my seat to get a good look at the memo, I realized the irony of the situation: Because the memo was nicely printed in a PostScript font on a laser printer, I could effortlessly read it at a distance. Ah, technology!) Anyway, I wrote up the discovery for a couple of newspapers.

What mystifies me is why it took Apple so long to execute the plan. I wrote about the scheme in December 1987! Four years of dillydallying seems a bit much. As far as I can see, it's just too late. Now it's time to bury that old Mac — for good. It's dated. It's homely. It's too damn funky. Let's hope upon hope that Apple doesn't decide to introduce a Classic Plus!

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